

Sept. 1, 1931.

P. GUILBERT ET AL

1,821,340

SPECIAL MOTOR DRIVEN CAR WITH SEVERAL CRANES DRIVEN FROM ONE
POINT FOR THE MECHANICAL LAYING AND REMOVING
OF THE ELEMENTS OF RAILROAD TRACKS

Filed Oct. 2, 1929

5 Sheets-Sheet 1

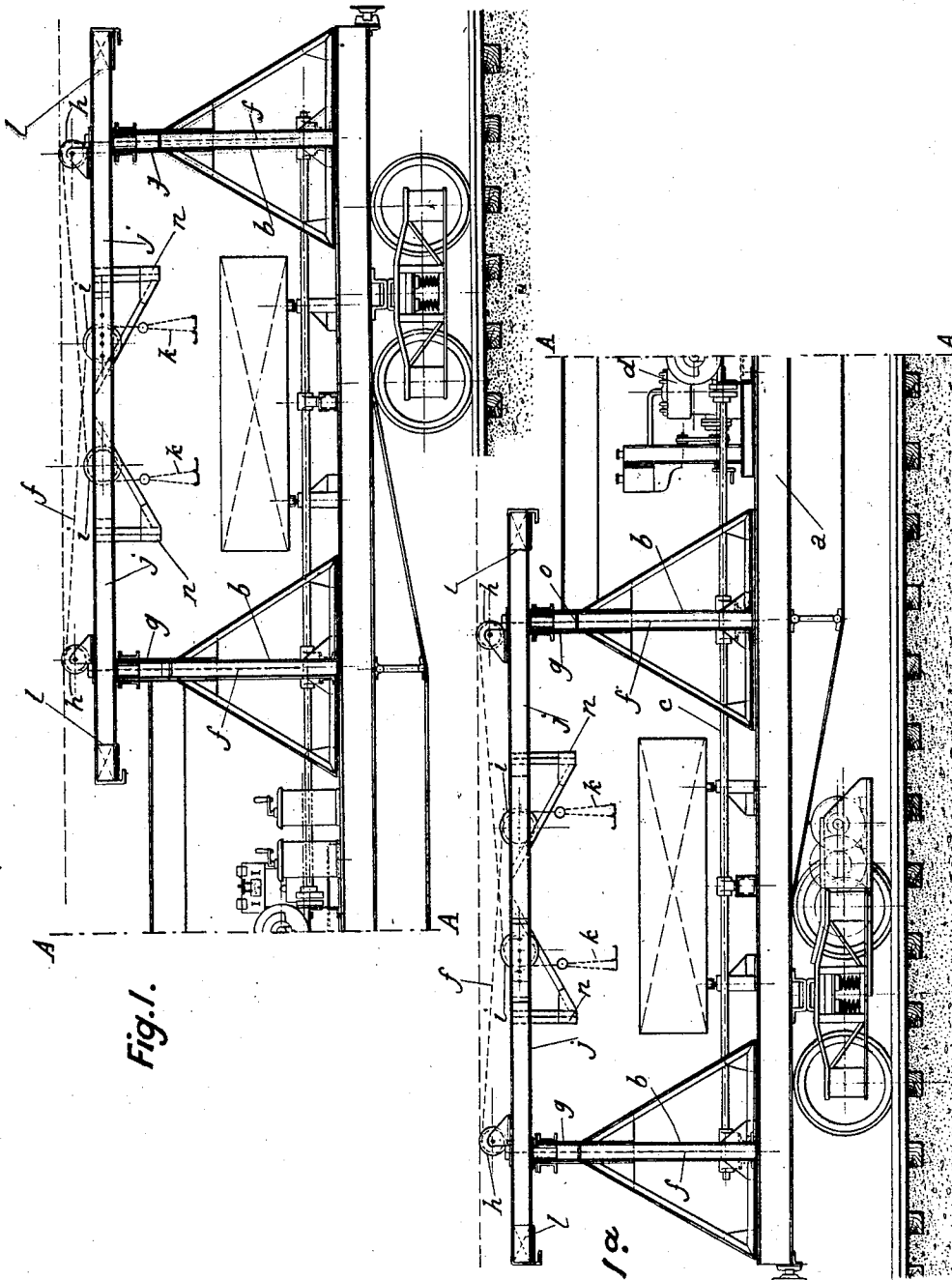


Fig. 1.

Fig. 1a.

Inventors:
Paul Guilbert and
Julien Legendre
by *[Signature]*
Attorney

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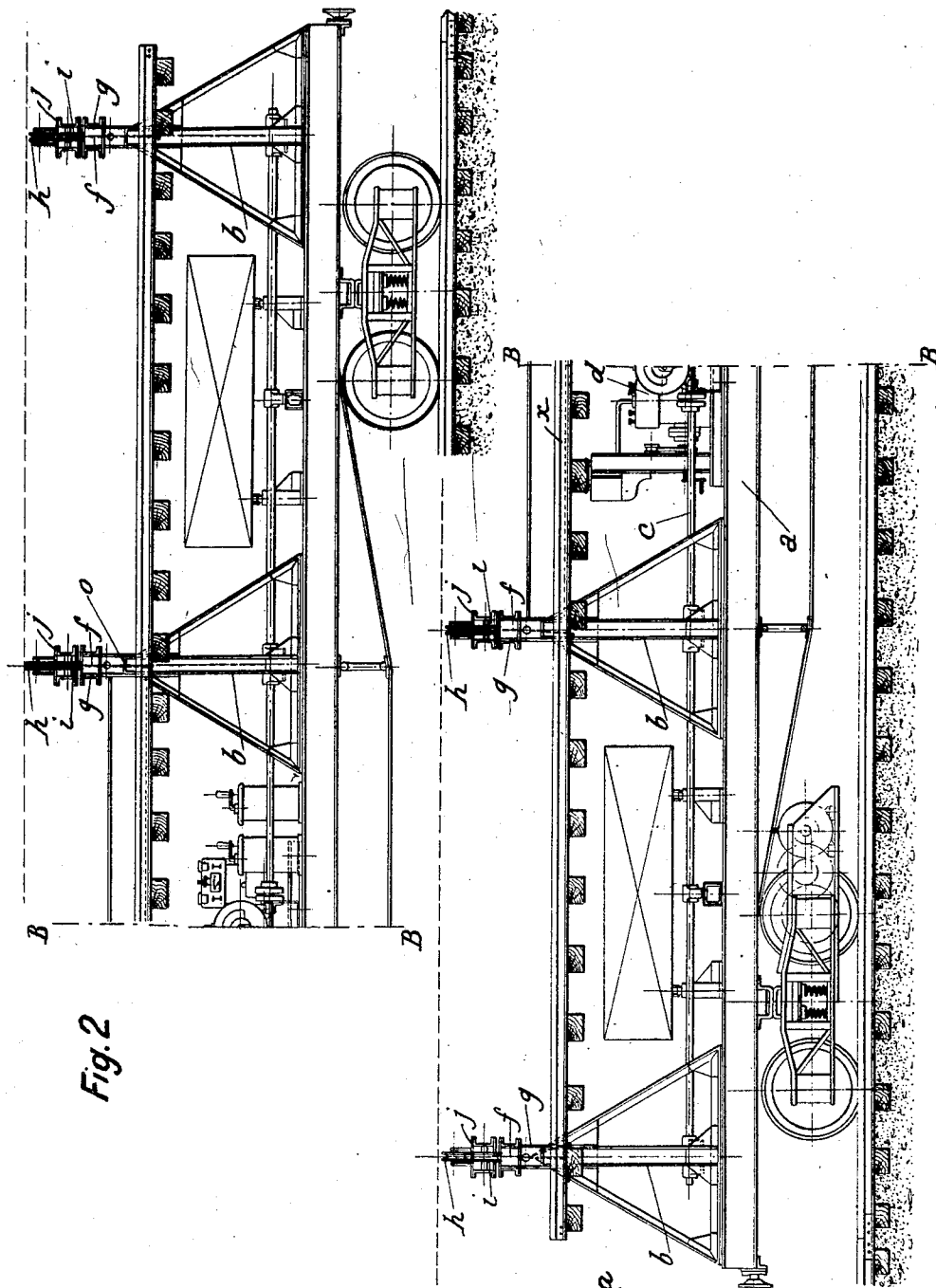


Fig. 2

Fig. 2a

Inventors:
Paul Guilbert and
Julius Lagrange
by *[Signature]*

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Fig. 3

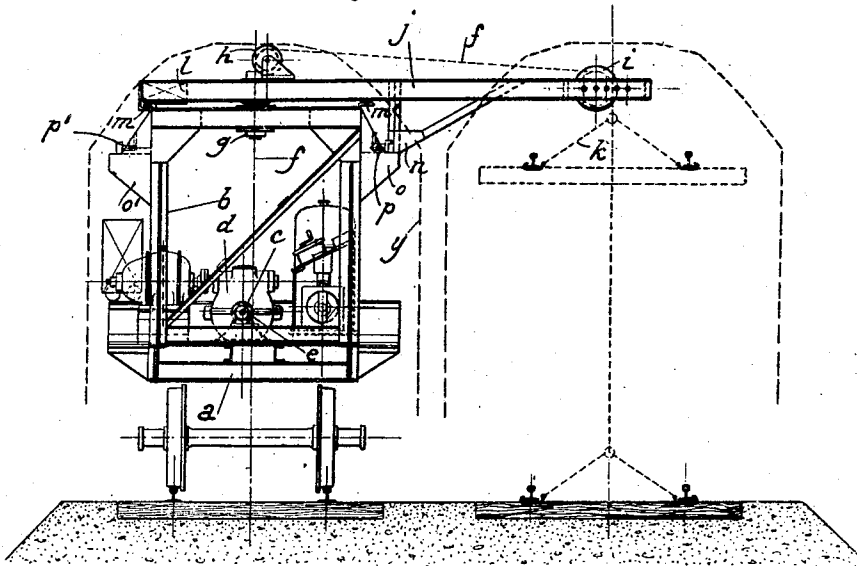
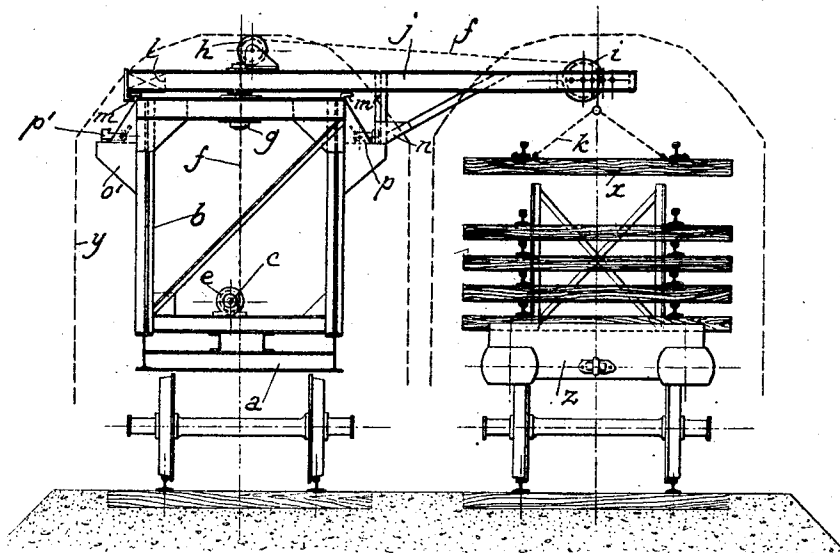


Fig. 4



Inventors:
Paul Guilbert and
Julius Lagrange
by *[Signature]*
attorney

Sept. 1, 1931.

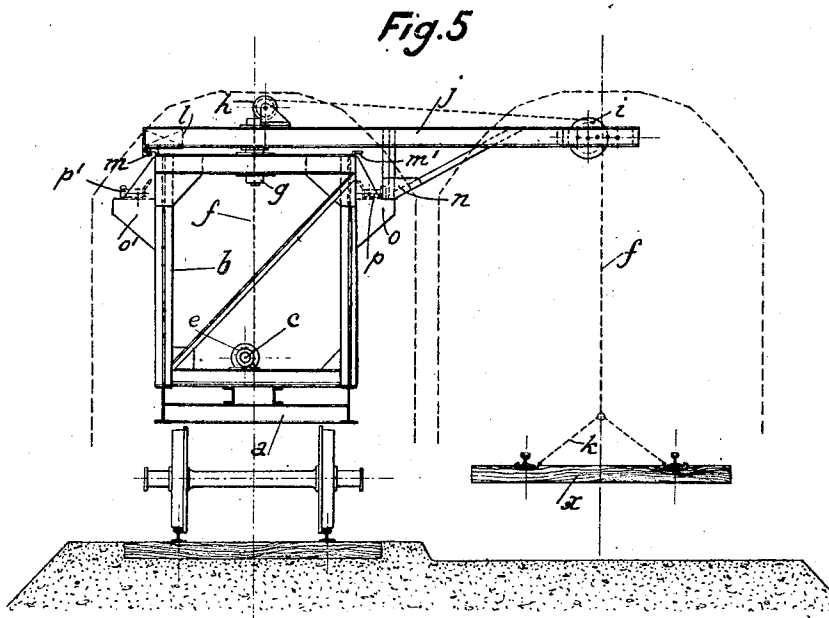
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Inventors:
Paul Guilbert et al
Julio Legrand
by *[Signature]*

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Fig. 6

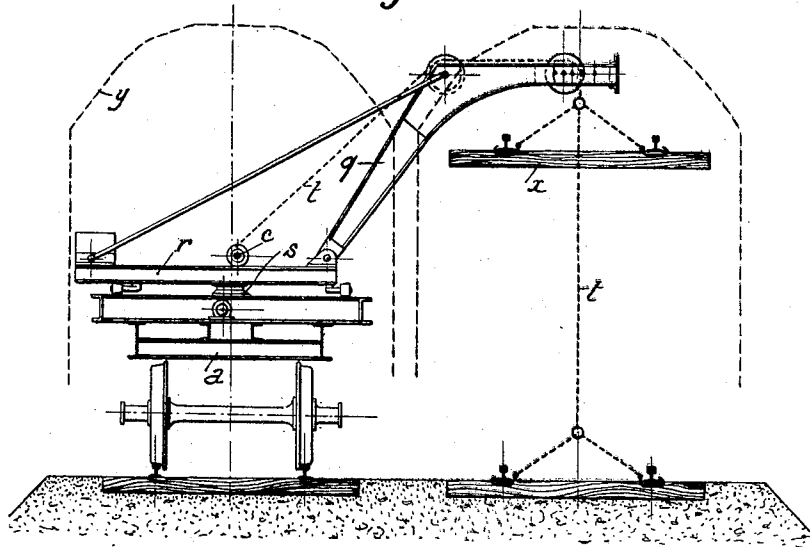
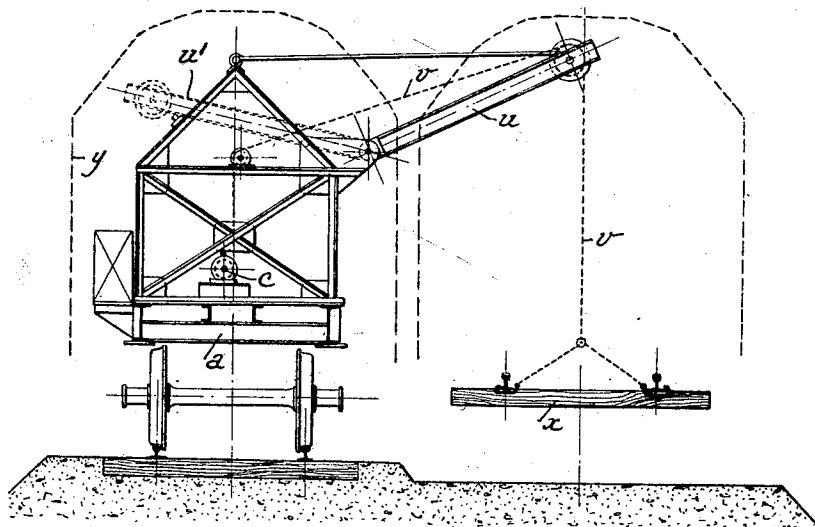


Fig. 7



Inventors:
Paul Guilbert and
Julius Legrand
by Geo. H. ...
attorneys

UNITED STATES PATENT OFFICE

PAUL GUILBERT, OF ROUEN, AND JULES LEGRAND, OF ST. MANDE, FRANCE

SPECIAL MOTOR DRIVEN CAR WITH SEVERAL CRANES DRIVEN FROM ONE POINT FOR THE MECHANICAL LAYING AND REMOVING OF THE ELEMENTS OF RAILROAD TRACKS

Application filed October 2, 1929, Serial No. 396,855, and in France January 26, 1929.

This invention relates to a device for mechanically laying and removing the elements of railroad tracks, said elements being fitted complete.

5 Up to the present the laying of railroads was effected by putting in place first the sleepers, on which then the rails were placed and secured, all this having been done entirely by manual labour.

10 For removing the elements of an existing track the rails were first removed and then the sleepers.

The special car, which forms the object of this invention, is established for the application of a new method obviating the inconveniences of the hitherto applied method and considerably increasing the speed of laying railroads and of removing existing tracks, the manual labour being reduced at the same time in very considerable proportion.

15 This method, applied to the removing of an existing track, consists in lifting the elements of the track as they are, after the rails had their fish plates removed, the lifting being effected by means of the car on which several cranes are mounted and coupled together, said car running on a track parallel to the track to be relaid. This special crane car driven by motor is then moved and carries the removed element to a position above flat trucks specially arranged and which are brought empty on the track to be relaid close to the working spot. After the element has been deposited on one of these flat trucks, the crane car removes another element, and so forth.

20 For the laying of a track the elements fitted complete are brought close to the place where they have to be laid, and on the same track, by means of specially arranged flat trucks. One of these elements is gripped and lifted by the cranes of the crane car, said car running on the parallel track and conveys the lifted element accurately to the place where it has to be laid, whereupon this element is deposited on the ground and secured by fish plates to the preceding element. The crane car returns then to fetch another element and so forth.

Several embodiments of the invention are illustrated by way of example in the accompanying drawings in which:

25 Figs. 1 and 1*a* show in side elevation the motor driven crane car in the position for transport, the cranes being swung in, these figures being two sections joining along the line A—A.

The Figs. 2 and 2*a* are together a side elevation showing the crane car in the operative position, one track element having been lifted, said view designed to be joined along the line B—B.

30 The Fig. 3 is a cross section of the crane car in the position for laying an element of the track.

The Fig. 4 shows in cross section the position for loading onto or unloading from another car.

35 The Fig. 5 shows one element of the track being laid.

Figs. 6 and 7 show modifications of the crane car.

40 The apparatus designed for handling the elements of a track to be laid or removed consists essentially, according to the invention, of a car, the length of which is approximately that of the longest element to be handled. This car is rendered automotive by a suitable mechanism acting upon one of its axles. The car might however be drawn by tractor or locomotive. Several cranes designed to lift the elements of the track are mounted on this car.

45 Referring to Figs. 1 to 5 the crane car *a* carries four cranes *b, b, b, b*. These cranes are arranged so that in the operative position they extend over the track on which the laying or removing has to be done, whereas in inoperative position they extend along the longitudinal section *y* of the track on which the car is running. The hoisting cables of these cranes must be regulated accurately to the same length, and they are driven so that the same length of cable is wound on each drum to hoist the track element in horizontal position and without any deformation, this being of the greatest importance, specially when manipulating elements of great length, for instance 24 meters long.

This result is obtained by driving the four cranes *b* from one single shaft *c* which itself is revolved from a suitable driving system, for instance a motor *d* with suitable speed reducer. On this shaft *c*, at the right of the axis of each crane, a drum *e* is mounted designed to wind up or to unwind the cable *f* of the corresponding crane. The shaft *c* is placed slightly on the outer side of the pivot axle of the cranes so that the cable *f* extends vertically in the geometric axis of the pivot *g*.

The cable *f*, which traverses this hollow pivot *g*, is guided at its upper portion on a pulley *h*, then on a pulley *i* at the jib head carried by the pivotable arm *j*, and the cable carries at its end a special system of hooks *k* designed to grip the rails of the track element *x*.

In the form of construction shown in Figs. 1 to 5 each crane has a foot consisting of a fixed portal gantry *b* on which, by the hollow pivot *g* an arm *j* forming jib is articulated. This arm *j* is counter balanced by a heavy mass *l* so that, when empty, it is in equilibrium around the pivot. In the travelling position the cranes are turned inside (Fig. 1) and secured in position in any suitable manner, for instance every two cranes connected with one another. In the operative position (Figs. 2 to 5) the rear of the jib *g* is hooked at *m* on the portal gantry *b*, whereas the front end carries a foot *n* resting upon a bracket *o*, projecting from the portal gantry. This portal gantry is further symmetric, in order that the work can be carried out from the one side or the other. It carries therefore a hooking device *m'* and a bracket *o'* opposite the bracket *o* and hooking device *m*.

The pulley *i* at the head of the jib *g* can assume on this jib different positions according to the gauge of the track.

The movable arm *g* is secured in the operative position by a latch *p* or *p'* which blocks the foot *n* on the bracket *o* or *o'*, preventing thus the arm from oscillating during the work.

The arm *j*, when empty, is balanced around the pivot *g* and, when working, it is hooked on the rear of the portal gantry *b*, the latter being fixed on the car *a*, which itself is balanced in a suitable manner.

The mode of operation by means of this car is as follows: The car is run, in the position Fig. 1, on the track parallel to the track to be relaid. The cranes are then turned to the outer side. An element of the track, fitted complete and preferably with fish plates removed, is hooked on the cables *f*, by means of hooks *k* (Figs. 2 and 3), whereupon the car is started to carry the lifted element to a position above a suitable flat truck *z* (Fig. 4) which, when empty, has been run on the track to be relaid close to the working place. The track element is de-

posited on this track, and the crane car started again to fetch another element, and so forth.

For laying the track the track elements fitted complete are conveyed on flat trucks close to the place, where the track has to be laid. One of these track elements is gripped and lifted by the cranes on the crane car which, running on the parallel track, conveys the element to the place where it has to be laid and deposits it on the ground (Fig. 5), where it is secured by fish plates. The crane car returns then to fetch another element, and so forth.

Fig. 6 shows a modified form of construction according to which the cranes *q* have each a pivotable frame, the other arrangements concerning the driving from one single shaft *c* being the same. The hollow pivot *s* of the pivotable frame *r* is mounted in the axis of the car, and the cable *t* of the crane traverses said hollow pivot along its axis. The advantage of this arrangement resides in the fact that, when making the crane pivot through a more or less great angle, the jib can be moved more or less away from the axis of the car, this permitting work with a more or less great track gauge. A suitable blocking system permits of securing each crane in the several positions.

The same result can be obtained by means of cranes articulated on the side of fixed portal gantries or of pivotable frames. The cable of each crane passes in this case through the pivot. The same advantages as before are thus obtained.

In the form of construction shown in Fig. 7 the same effects are obtained without pivotable units, each crane consisting of an oscillatable arm *u* adapted to be lowered. In the operative position this arm is oscillated outwards into the position *u* and in the inoperative position, or travelling position, it is oscillated inwards into the position *u'*, so that it is accommodated within the gauge *y*. The arrangement that one single shaft *c* is used for driving is preserved, and the cable *v* of the crane is attached to the drum keyed on this single shaft in the direction of the axis of the car.

We claim:—

1. A special car preferably automotive for the mechanical laying and removing of track elements fitted complete, comprising in combination a driving shaft extending along the car in longitudinal direction, drums on said shaft, and cranes on said car suitably spaced from one another, adapted to lift a track element fitted complete and further adapted to be swung out over the track to be laid or dismantled.

2. A special car as specified in claim 1, comprising in combination with a continuous driving shaft and drums on said shaft, cranes mounted on said car consisting each of a por-

tal gantry, a hollow pivot articulated on the top of said portal gantry, a horizontal jib arm on said pivot, a pulley adjustably mounted at the head of said jib arm, a pulley on the top of said portal gantry, a cable guided over said pulley and through said portal gantry and attached to the corresponding drum, and hooks at the free end of said cable.

3. A special car as specified in claim 1, comprising in combination with a continuous driving shaft and drums on said shaft, cranes mounted on said car consisting each of a portal gantry, a hollow pivot articulated on the top of said portal gantry, a horizontal jib arm on said pivot, a pulley adjustably mounted at the head of said jib arm, a pulley on the top of said portal gantry, a cable guided over said pulley and through said portal gantry and attached to the corresponding drum, hooks at the free end of said cable, a bracket on the side of said portal gantry, a foot on the front end of said jib arm adapted to rest on said bracket when said jib arm is in the swung out position, and a latch for locking said foot on said bracket.

4. A special car as specified in claim 1, comprising cranes consisting each of a pivotable frame adapted to be pivoted a more or less great angle so that the head of the crane can be spaced more or less from the axis of the car.

5. A special car as specified in claim 1, comprising in combination with fixed portal gantries, cranes articulated one on the side of each portal gantry.

6. A special car as specified in claim 1, comprising cranes each standing in the inoperative position in the axial direction of the car and adapted to be swung out into the operative position to extend over the adjacent track.

In testimony whereof we affix our signatures.

PAUL GUILBERT.
JULES LEGRAND.