No. 632,432. Patented Sept. 5, 1899.

C. F. UEBELACKER.

MAXIMUM TRACTION TRUCK.

(Application filed May 24, 1899.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1

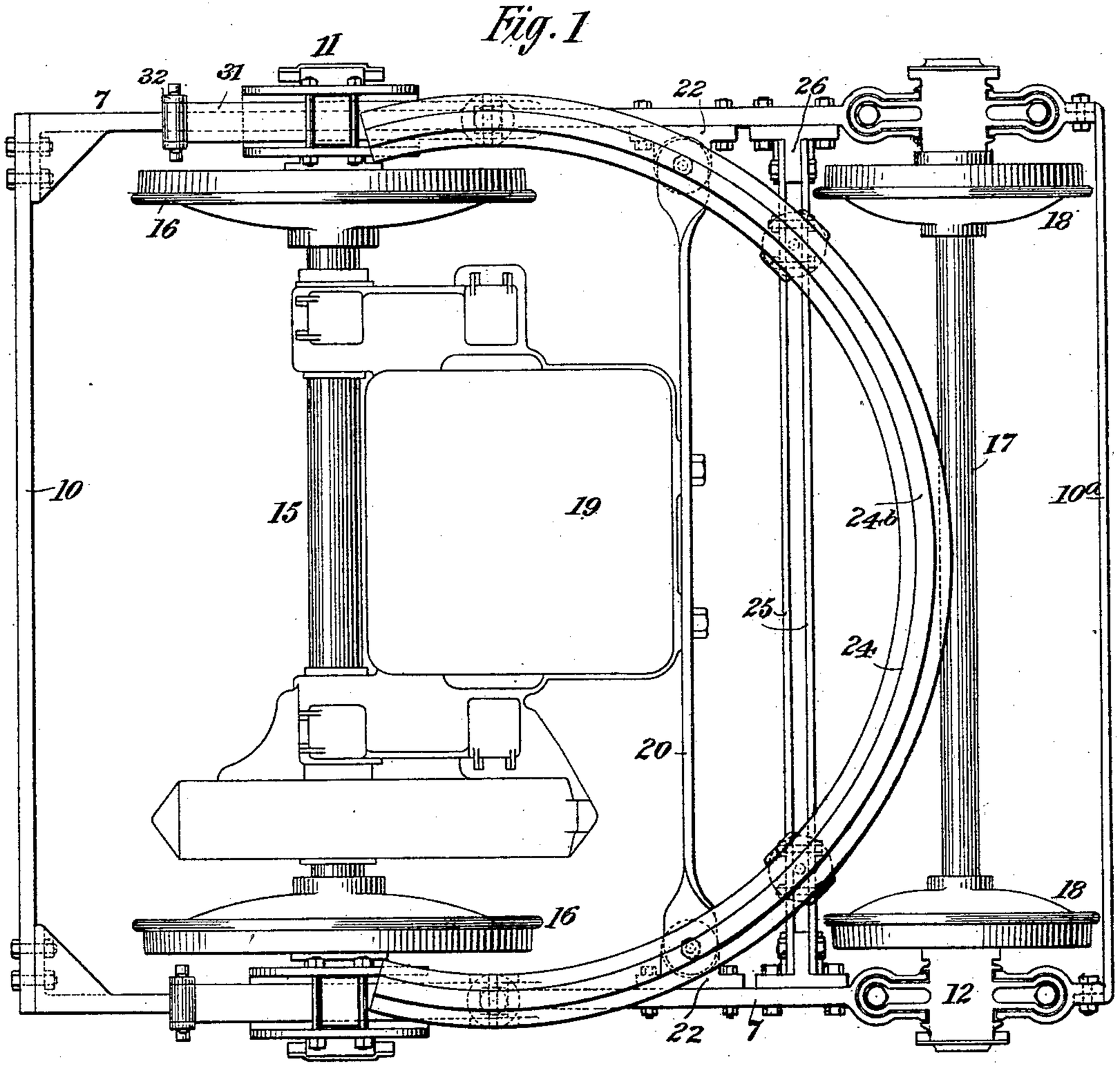
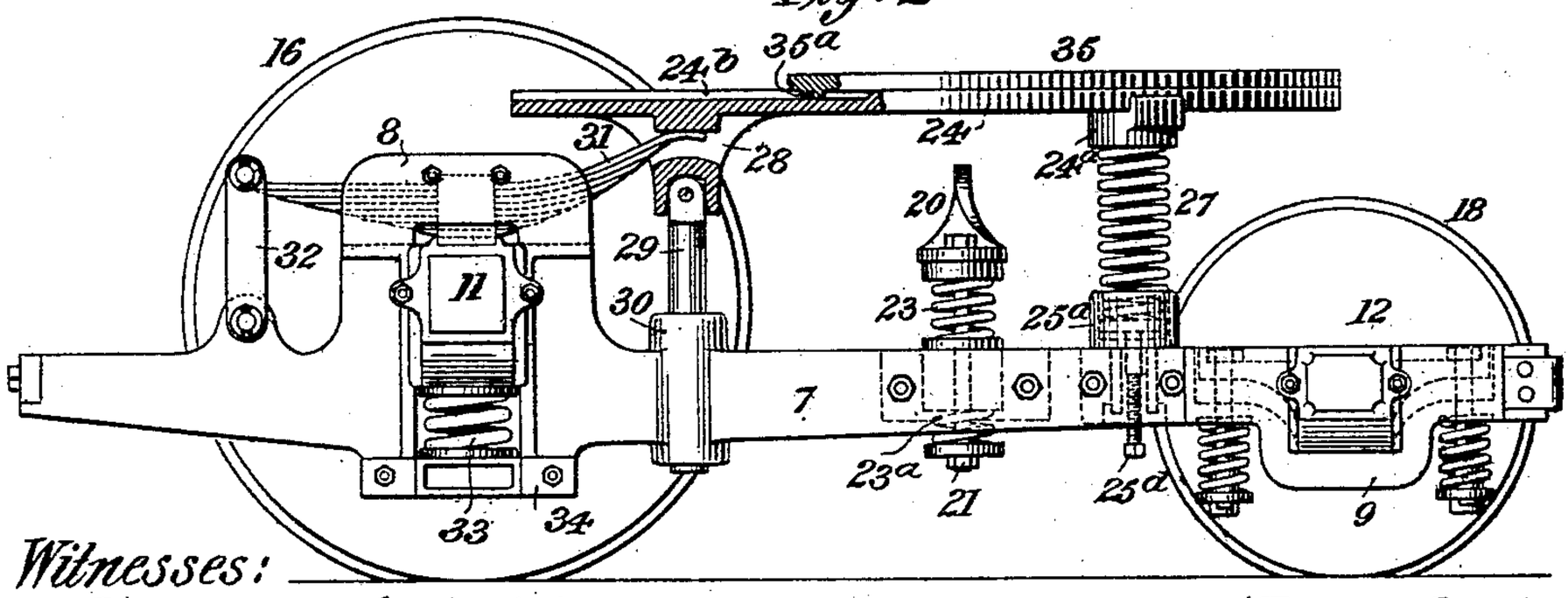


Fig. 2



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Inventor:
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(No Model.) 3 Sheets—Sheet 2.

Fig. 3

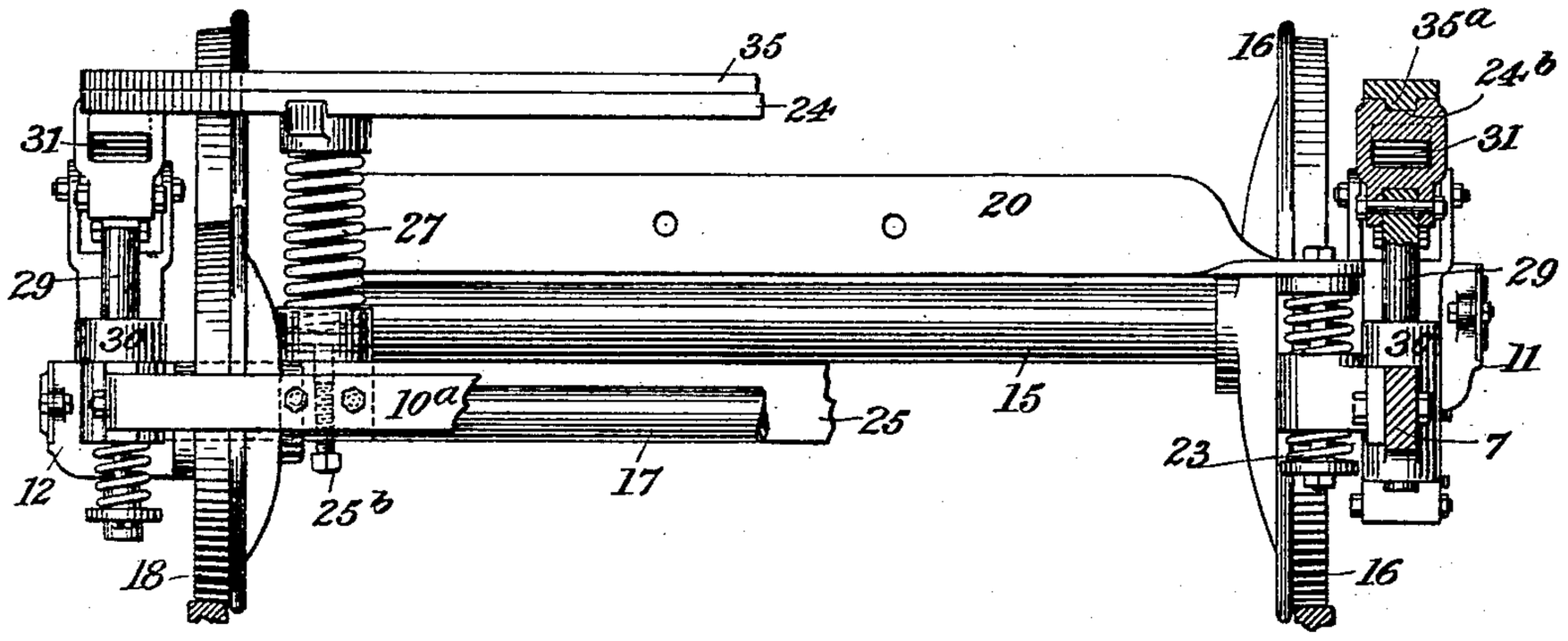


Fig. 4

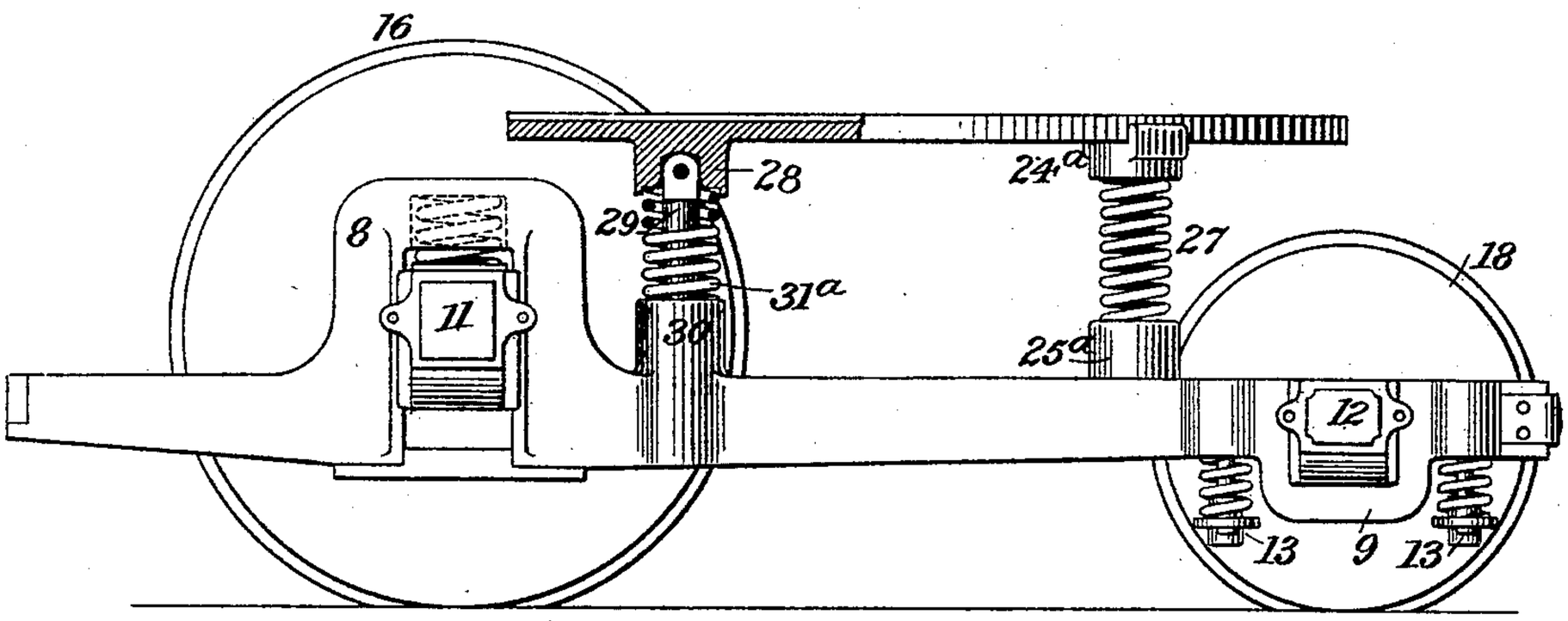
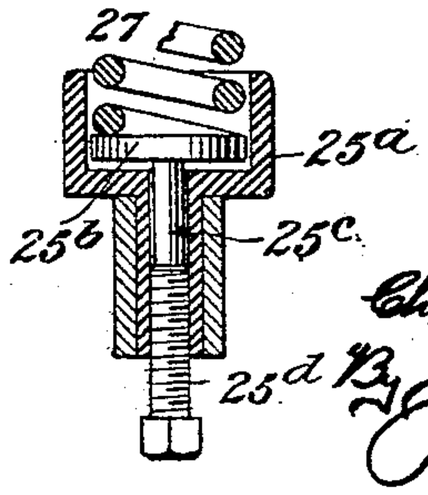


Fig. 6



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MAXIMUM TRACTION TRUCK.

(Application filed May 24, 1899.)

(No Model.) 3 Sheets—Sheet 3.

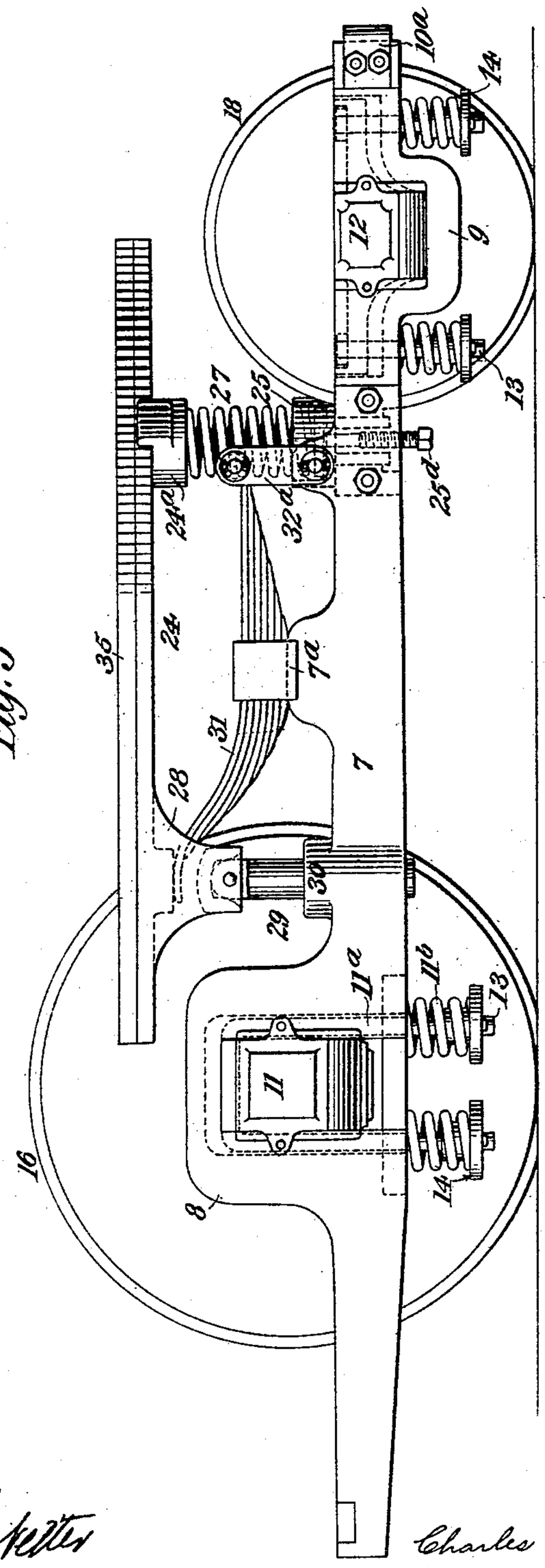

Fig. 5

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UNITED STATES PATENT OFFICE.

CHARLES F. UEBELACKER, OF KINGSTON, NEW YORK, ASSIGNOR TO THE PECKHAM MOTOR TRUCK AND WHEEL COMPANY, OF NEW YORK, N. Y.

MAXIMUM-TRACTION TRUCK.

SPECIFICATION forming part of Letters Patent No. 632,432, dated September 5, 1899.

Application filed May 24, 1899. Serial No. 718,010. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. UEBELACKER, of Kingston, Ulster county, State of New York, have invented certain new and useful Improvements in Maximum-Traction Trucks, of which the following is a specification.

The present invention relates to improvements in maximum-traction trucks which are used in pairs to carry a car-body and which are intended to be propelled by electric motors.

An object of the invention is to provide a short wheel-base swivel-truck of the maximum-traction type which shall be particularly adapted for handling cars on heavy grades with each truck provided with one motor only.

A further object is to devise a construction whereby the car-body may be brought nearer the track than has been heretofore possible and without the necessity of increasing the width of the car-body.

A further object is to so apply the weight carried by the truck that the necessary traction will be placed on the driving-wheels and the pilot-wheels will not be liable to jump the track when rounding curves.

In the present construction the electric motor is suspended between the axles, being pivoted in the usual manner to the axle of the driving-wheels and supported at its front end on a hanger, which is elastically mounted on the side frames near the center of the truck. The truck is mounted on wheels of two sizes, the driving-wheels being larger than the pilot-wheels and the latter being sufficiently small in diameter to permit them to swivel under the car-sills. As the driving-wheels must be of sufficient diameter to give the necessary clearance between the track and the motor and as they must swing between the car-sills, it is essential that they should have a short swing if the width of the car is not increased, and to accomplish this it is necessary to bring the center of swing away from the central point between the axles and near to the center of the driving-axle. This object is attained in the present instance by having the car-body supported and guided by a two-part slide of semicircular form, with the ends of its lower member supported on the truck-frame near the driving-axle and with its forward portion supported on a transverse bar or bars reaching from side to side of the truck-frame near the axle of the pilot-wheels, such slide being, however, located wholly between the two axles of the truck. The other part of the slide is attached to the car-body and a projection on one part travels in a groove on the other part. Provision is made for adjusting the proportion of weight on the pilot-wheels. The construction also insures the necessary percentage of traction on the driving-wheels.

In the accompanying drawings, which form part of this specification, and in which like features are indicated by the same numerals of reference in the several views, Figure 1 is a plan of a truck embodying my improvements; Fig. 2, a side elevation, partly in section; Fig. 3, an end view, partly broken away, on the line 3 3 of Fig. 1; Fig. 4, a side view of a modified construction; Fig. 5, a similar view showing another modification, and Fig. 6 a detail hereinafter referred to.

Referring to the drawings, the side frames of the truck, which are made of solid steel castings, are indicated at 7, and they include as integral parts thereof the yokes 8 for the journal-boxes of the driving-axle and the depressed portions 9, which receive the journal-boxes on the axle of the pilot-wheels. The side frames 7 are connected together at their ends by the transverse beams 10 10^a, riveted to the side frames, as shown. The portions of the side frame containing the yoke 8 and the depression 9 are broadened in order to accommodate the journal-boxes, as shown in plan view, Fig. 1. By constructing the side frames with the depressions 9 instead of with yokes extending above the frames to receive the journal-boxes of the pilot-wheels the height of the frames from the track is decreased, as no part of the side beam 7 of the frame projects above the upper surface of the journal-box. The journal-boxes on the axle of the driving-wheels are indicated at 11 and the journal-boxes on the axle of the pilot-wheels at 12. The journal-box 12 is constructed with arms (indicated in dotted lines in Figs. 2 and 5) which fit into depressions

in the frame and are perforated at their outer ends, which perforations when the journal-box is in position are coincident with holes through the frame which receive the bolts 13, extending beneath the bottom edge of the frame and provided with the springs 14. The bolts 13, with their springs 14, serve to elastically hold the journal-box in the depression in the frame.

The axle of the driving-wheels is indicated at 15, the driving-wheels at 16, and the axle of the pilot-wheels at 17, and the pilot-wheels at 18. The pilot-wheels 18 are sufficiently small to swivel under the sills of the car when the car is brought to its lowest position with relation to the track. The electric motor is shown at 19 sleeved upon the axle 15 in the usual way inside the driving-axle and supported at its front end by the bar 20, set on edge and having its extreme ends twisted around, so as to bring the broad surface of the bar at its ends in a plane at right angles to the edge of the bar. The bar 20 is elastically supported on bolts 21, mounted in brackets 22, bolted to the side frames 7. The flat ends of the bar 20 are perforated to receive the bolts 21, and between suitable washers on said bolts at the top and bottom surfaces of the brackets 22 are placed the springs 23 23^a, whereby the desired elasticity is afforded to the motor-supporting bar or hanger 20. It will be seen that the motor 19 is located between the axles of the truck and serves by its weight to increase the traction on the driving-wheels 16, which wheels are of sufficient diameter to give clearance between the motor and the track.

To give to the driving-wheels a short swing to permit them to swing between the car-sills, with the height of the car-body from the track reduced as low as the motors will allow and without any increase in the width of the car-body, is the object of the means whereby I bring the center upon which the car swings away from the center of the truck and near the center of the driving-axle. In the present embodiment of my invention the car-body is supported on a semicircular slide, which is spring-supported on the side frames of the truck. This slide is indicated at 24, and it extends from near one end of the driving-axle to near its opposite end and forward to near the center of the pilot-axle. It is flexibly supported near its ends, and also flexibly supported beyond the motor-hanger on a transom 25, extending from side frame to side frame near the pilot-wheels and bolted to brackets 26, which in turn are bolted to the side frames 7. On the transom 25 at a suitable distance from its ends are the pockets 25^a, in which are seated the springs 27, which in turn are seated in pockets 24^a on the bottom of the slide 24. The springs 27 furnish the necessary flexible support for the slide 24 near the pilot-axle. Near the ends of said slide on its under surface it is provided with brackets 28, in which are hinged guide-rods 29, adapted to play through sockets 30, formed in the side frames 7. By this means the ends of the slide 24 are flexibly connected to the truck-frame. The ends of the slide are also elastically supported on the truck-frame, as shown. These elastic supports in Fig. 2 consist of the semi-elliptic springs 31, held by straps in depressions in the tops of the yokes 8, with one end extending beneath the slide 24 and bearing upon suitable abutments on the under surface of the slide, the opposite ends of the said springs being hinged to links 32, which are in turn hinged to the side frames 7 in advance of the yokes 8. This construction, in connection with the hinged guide-bolts 29 and springs 27, permits the slide to adapt itself to the varying conditions to which it may be subjected as the truck swivels under the car-body when rounding curves.

In Fig. 2 the journal-boxes 11 are provided beneath their bottoms with spiral springs 33, which serve the usual function, and the detachable pieces 34, in which the springs 33 are seated, permit the driving-wheels, axle, and journal-boxes to be removed when desired, the pilot-wheels and axles being likewise removable by withdrawing the bolts securing the arms of the journal-boxes 12 in the depressions made in the tops of the side frames 7.

The companion part of the slide which is attached to the car-body is indicated at 35. It is provided on its bottom with a projection 35^a, which when the car is mounted on the truck fits into the groove 24^b in that portion of the slide 24 secured to the truck-frame, the two parts of the slide being thus kept in proper engagement, guiding the swing of the truck under the car and fixing the center of swing near the driving axle, and thereby giving to the driving-wheels the requisite short swing, so that they are permitted to swing between the sills of narrow cars, whose height above the track is made as little as it is practicable to have it, to allow for clearance between the motor and track.

To change or regulate the proportion of weight on the pilot-wheels, a disk 25^b, with a stem 25^c, is arranged in the bottom of each of the pockets 25^a, in which are seated the springs 27, the stem of the disk extending into a channel formed in an extension of the pocket. A screw 25^d, which enters the channel below the stem 25^c, may be adjusted to raise the disk to compress the spring 27 to increase the weight on the pilot-wheels, a reverse movement of the screw releasing the compression on the spring and consequently reducing the weight on the wheels. (See Fig. 6.)

In Fig. 4 the means for affording an elastic support to the ends of the slide 24 differs from the means shown in Fig. 2 in that the semi-elliptic springs 31 are dispensed with and the spiral springs 31^a are placed around hinged bolts 29 and seated in pockets formed in the socket 30. In this construction the spiral springs 33 of Fig. 2 are transferred from

the bottom of the journal-box to its top, as shown.

In Fig. 5 the construction is the same as in Fig. 2, except that the semi-elliptic springs instead of being fixed in the yokes 8 are secured to projections 7ª of the side frames 7, and while one end of said spring bears upon the abutment on the bottom of the slide 24 within the bracket to which the post 29 is hinged the opposite end of the said semi-elliptic spring extends toward the pilot-wheels and is connected to link 32ª, hinged to a projection on the side frame 7, as shown. In Fig. 5 instead of arranging springs at the bottom or at the top of the journal-box 11 I provide a stirrup 11ª, which straddles the journal-box, passing through openings in the yoke 8 and having its ends, which project beneath the lower edge of the side frame 7, equipped with suitable springs 11ᵇ, which bear upon the lower edge of the side frame and upon suitable washers on the ends of the limbs of the stirrup.

The constructions shown in Figs. 4 and 5 are the same in principle as that shown in Fig. 2. In each case the two-part slide is the same and the manner of elastically supporting the slide on the transom 25 is the same. The manner of flexibly and elastically supporting the ends of the slide in proximity to the driving-axle varies only in construction and not in principle. The truck-frame is elastically supported on the journal-boxes, as is apparent, and the car-body when mounted on the slide 24 will be elastically supported by independent means on the truck-frame.

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

1. In a car-truck, the combination with the truck-frame and two pairs of wheels one pair being the driving-wheels, of a two-part semicircular slide, spring-supported on the truck-frame and located between the axles of the truck and extending the width of the truck-frame, one part of the slide adapted to be connected to the car-body, the construction operating to bring the center upon which the car swings near the center of the driving-axle for the purpose set forth.

2. In a car-truck, the combination with the truck-frame and two pairs of wheels one pair being the driving-wheels, of a two-part semicircular slide spring-supported on the truck-frame and located inside the driving-axle and extending the width of the truck-frame, one part of said slide having a groove and the other a projection fitting in said groove, the upper member of said slide adapted to be connected to the car-body, the construction operating to bring the center upon which the car swings near the center of the driving-axle for the purpose set forth.

3. In a car-truck, the combination with the truck-frame and two pairs of wheels one pair being the driving-wheels, of a two-part semicircular slide spring-supported on the truck-frame and located inside the driving-axle and extending the width of the truck-frame, one part of said slide having a groove and the other a projection fitting in said groove, the upper member of said slide adapted to be connected to the car-body, and an electric motor pivoted to the driving-axle and suspended inside the driving-axle.

4. In a car-truck, the combination with a pair of axles carrying respectively the driving-wheels and the pilot-wheels, journal-boxes, and a truck-frame spring-supported on the journal-boxes, of a two-part semicircular slide spring-supported on the truck-frame and located inside the driving-axle and extending the width of the truck-frame, one part of said slide having a groove and the other a projection fitting in said groove, the upper member of said slide adapted to be connected to the car-body.

5. In a car-truck, the combination with a pair of axles carrying respectively the driving-wheels and the pilot-wheels, journal-boxes, and a truck-frame spring-supported on the journal-boxes, of a two-part semicircular slide spring-supported on the truck-frame and located inside the driving-axle and extending the width of the truck-frame, one part of said slide having a groove and the other a projection fitting in said groove, the upper member of said slide adapted to be connected to the car-body, and an electric motor pivoted to the driving-axle and suspended inside the driving-axle.

6. In a car-truck, the combination with the truck-frame, a pair of driving-wheels and a pair of pilot-wheels of smaller diameter than the driving-wheels, of a two-part semicircular slide spring-supported on the truck-frame and located inside the driving-axle and extending the width of the truck-frame, one part of said slide having a groove and the other a projection fitting in said groove, the upper member of said slide adapted to be connected to the car-body.

7. In a car-truck, the combination with the truck-frame, a pair of driving-wheels and a pair of pilot-wheels of smaller diameter than the driving-wheels, of a two-part semicircular slide spring-supported on the truck-frame and located inside the driving-axle and extending the width of the truck-frame, one part of said slide having a groove and the other a projection fitting in said groove, the upper member of said slide adapted to be connected with the car-body, and an electric motor pivoted to the driving-axle and suspended inside the driving-axle.

8. In a car-truck, the combination with a pair of driving-wheels, a pair of pilot-wheels of smaller diameter than the driving-wheels, axles for the two pairs of wheels, journal-boxes for the axles, and a truck-frame spring-supported on the journal-boxes, of a two-part semicircular slide spring-supported on the truck-frame and located inside the driving-axle and extending the width of the truck-

frame, one part of said slide having a groove and the other a projection fitting in said groove, the upper member of the said slide adapted to be connected with the car-body.

9. In a car-truck, the combination with a pair of driving-wheels, a pair of pilot-wheels of smaller diameter than the driving-wheels, axles for the two pairs of wheels, journal-boxes for the axles, and a truck-frame spring-supported on the journal-boxes, of a two-part semicircular slide spring-supported on the truck-frame inside the driving-axle and extending the width of the truck-frame, one part of said slide having a groove and the other a projection fitting in said groove, the upper member of said slide adapted to be connected to the car-body, and an electric motor pivoted to the driving-axle and supported inside the driving-axle.

10. In a car-truck, the combination with the axles, journal-boxes, a pair of driving-wheels and a pair of pilot-wheels of smaller diameter than the driving-wheels, of side frames having integrally-formed pedestals at the driving-wheel ends and depressions extending below the under edges of the frames at the pilot-wheel ends to receive and retain the journal-boxes so that their top surfaces will normally be flush with the top edges of the side frames, a two-part slide spring-supported on the truck-frame inside the driving-axle and extending the width of the truck-frame, one part of said slide grooved and the other part having a projection fitting in said groove, the upper member of said slide adapted to be connected to the car-body.

11. In a car-truck, the combination with the axles, journal-boxes, a pair of driving-wheels and a pair of pilot-wheels of smaller diameter than the driving-wheels, of side frames having integrally-formed pedestals at the driving-wheel end and depressions extending below the under edges of the frames at the pilot-wheel ends to receive and retain the journal-boxes so that their top surfaces will normally be flush with the top edges of the side frames, a two-part slide spring-supported on the truck-frame inside the driving-axle and extending the width of the truck-frame, one part of said slide grooved and the other part having a projection fitting in said groove, the upper member of said slide adapted to be connected to the car-body, and an electric motor pivoted to the driving-axle and supported inside the driving-axle.

12. In a car-truck, the combination with the side frames, the axles, journal-boxes and driving and pilot wheels, of a two-part semicircular slide, one part adapted to slide in the other part and spring-supported on the truck-frame inside the driving-axle and extending the width of the truck-frame, and means whereby the springs supporting the slide near the pilot-wheels may be adjusted to change the proportion of weight on the pilot-wheels.

13. In a car-truck, the combination with the side frames, the axles, journal-boxes and driving and pilot wheels, of a two-part semicircular slide, one part adapted to slide in the other and spring-supported on the truck-frame inside the driving-axle and extending the width of the truck-frame, an electric motor pivoted to the driving-axle and suspended inside the driving-axle, and means whereby the springs supporting the slide near the pilot-wheels may be adjusted to change the proportion of weight on the pilot-wheels.

14. In a car-truck, the combination with the axles, journal-boxes and driving and pilot wheels, the pilot-wheels being of smaller diameter than the driving-wheels, and side frames spring-supported on the journal-boxes, of a two-part semicircular slide, one part adapted to slide in the other and spring-supported on the truck-frame inside the driving-axle and extending the width of the truck-frame, and means whereby the springs supporting the slide near the pilot-wheels may be adjusted to change the proportion of weight on the pilot-wheels.

15. In a car-truck, the combination with the side frame, axles, journal-boxes and driving and pilot wheels, the pilot-wheels being of smaller diameter than the driving-wheels, of a transom extending from side to side of the truck-frame near the pilot-wheels, a two-part semicircular slide, one part grooved and the other part having a projection fitting in said groove and located inside the axle of the driving-wheels, guide-bolts hinged to the slide near its ends and operating in sockets on the side frames, and suitable springs arranged on said transom to support that part of the slide near the pilot-wheels, and other springs supporting the said slide near its ends.

16. In a car-truck, the combination with the side frames, axles, journal-boxes and driving and pilot wheels, the pilot-wheels being of smaller diameter than the driving-wheels, of a two-part slide 24, 35, arranged inside the driving-axle, transom 25, springs 27, bolts 29 hinged to brackets on the slide and semi-elliptic springs supporting at one end the ends of said slide and hinged at their other end to links hinged to the truck-frame.

17. In a car-truck, the combination with the side frames each comprising a pedestal 8 and a depressed portion 9, journal-boxes 11 and 12 the latter held in the depressions of the said frames with their top surfaces normally on the same plane as the top edge of the side frames by bolts and springs, of a two-part slide 24, 35, transom 25, supporting-springs 27, guide-bolts 29 hinged to said slide and entering sockets in the side frames, semi-elliptic springs secured in the depressions in the tops of the pedestals 8 and supporting at one end the aforesaid slide, and hinged at their other end to links 32 hinged to the side frames in advance of the pedestals 8, and springs 33 beneath the journal-boxes 11 in the said pedestals.

18. In a maximum-traction truck, the combination with side frames provided with in-

tegrally-formed pedestals for the journal-boxes of the driving-axle and with depressions below the under edges of said frames to receive the journal-boxes of the pilot-axle, of bolts passing through the frames and extensions on the pilot-axle journal-boxes and projecting below the bottom edges of said side frames and equipped with suitable springs, and suitable springs below the journal-boxes of the driving-axle.

19. In a maximum-traction truck, the combination with side frames, axles, and driving and pilot wheels, of a two-part slide, one part thereof spring-supported on the truck-frame and the other part adapted to be connected to a car-body, and a disk and screw arranged beneath each of the springs supporting the slide contiguous to the pilot-axle, whereby the proportion of weight on the pilot-wheels may be regulated.

Signed at city of New York, county and State of New York, this 15th day of February, 1899.

CHAS. F. UEBELACKER.

Witnesses:
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