

(No Model.)

2 Sheets—Sheet 1.

E. S. BREED.

MEANS FOR SUPPORTING MOTORS AND MOTOR FRAMES.

No. 557,049.

Patented Mar. 24, 1896.

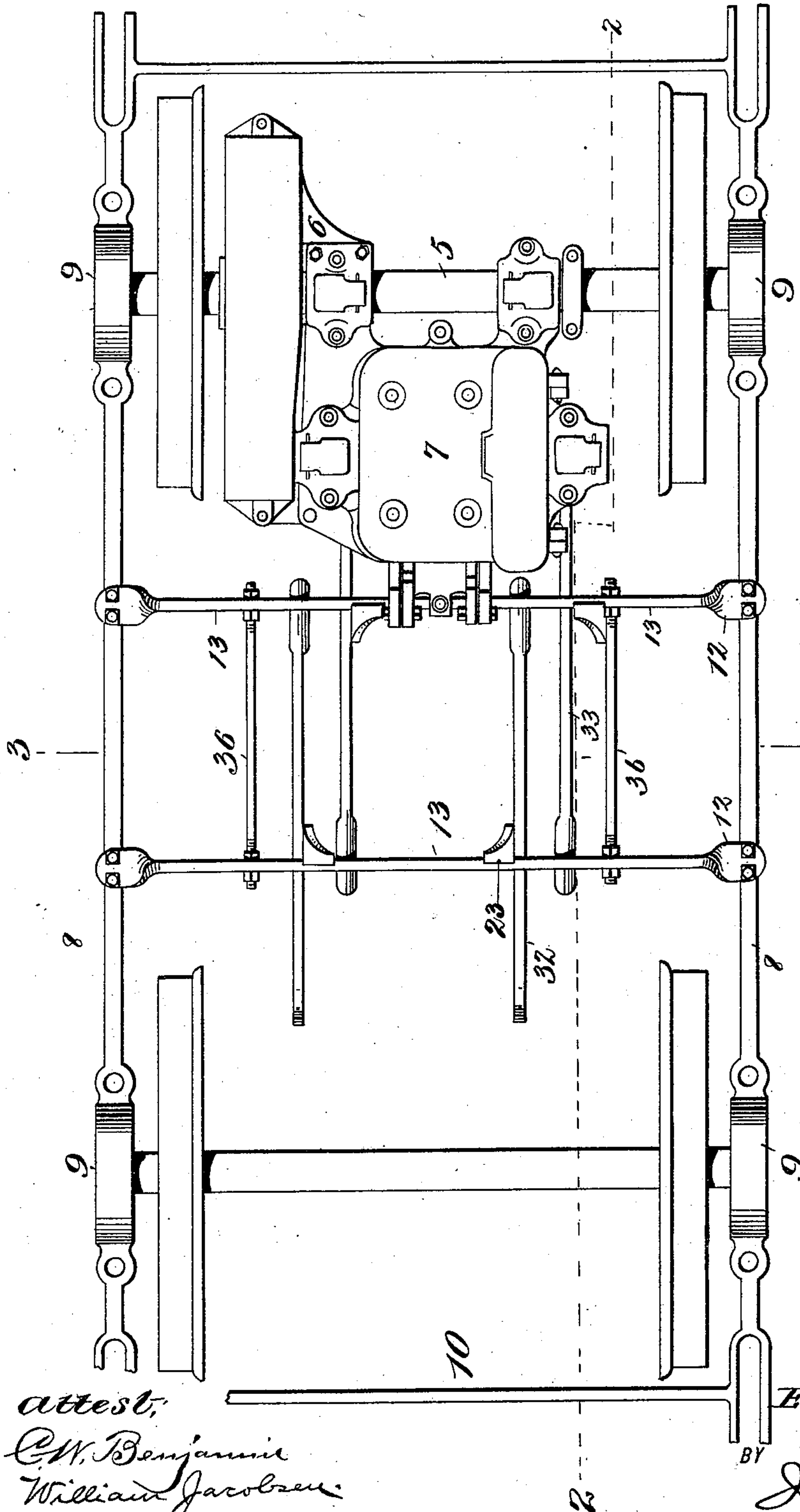


Fig. 1

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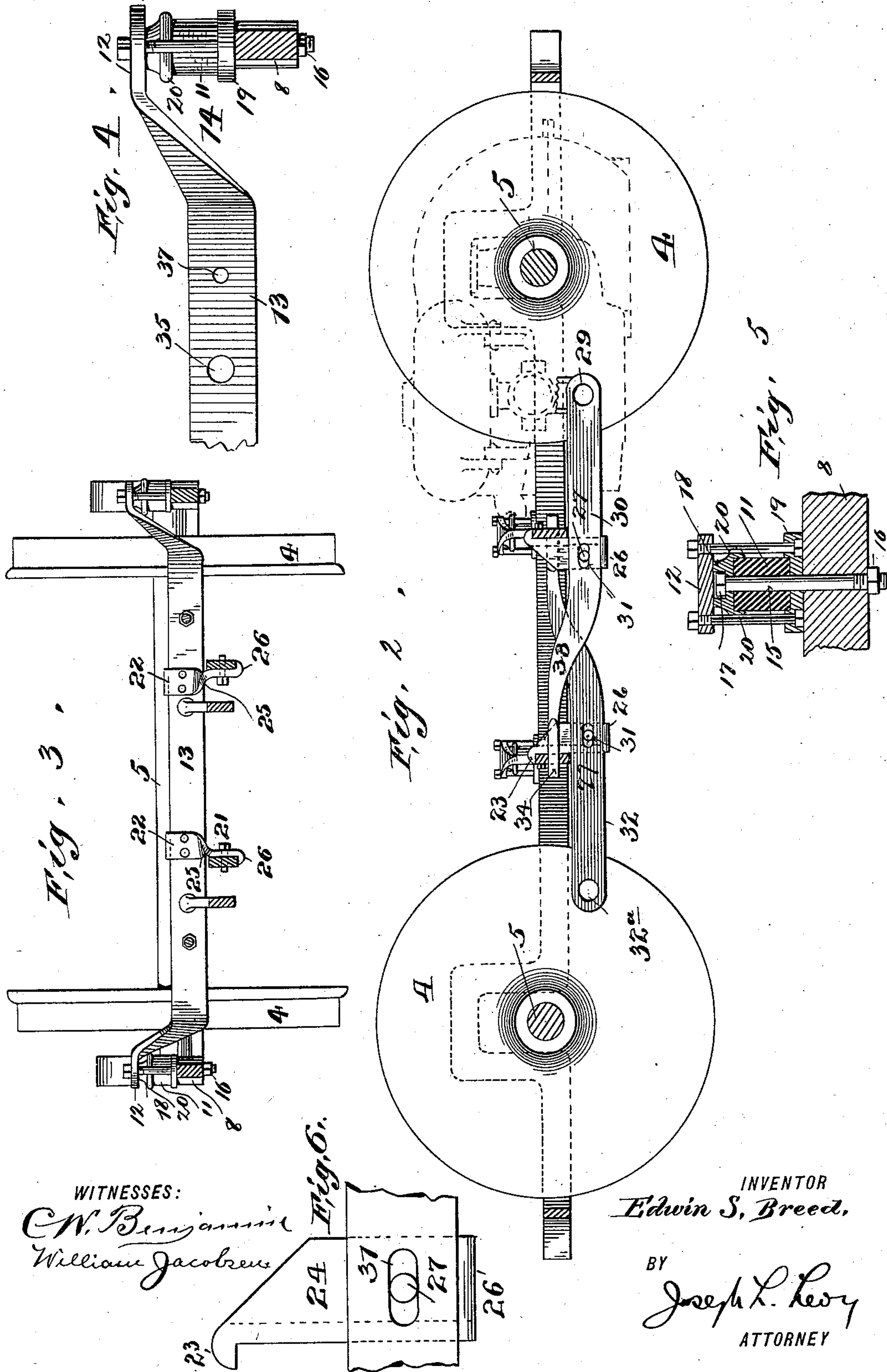
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WITNESSES:

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# UNITED STATES PATENT OFFICE.

EDWIN S. BREED, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO JOHN A. BRILL, OF PHILADELPHIA, PENNSYLVANIA.

## MEANS FOR SUPPORTING MOTORS AND MOTOR-FRAMES.

SPECIFICATION forming part of Letters Patent No. 557,049, dated March 24, 1896.

Application filed April 22, 1895. Serial No. 546,592. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN S. BREED, a citizen of the United States, residing at New Britain, in the county of Hartford and State of Connecticut, have made certain new and useful Improvements in Means for Supporting Motors and Motor-Trucks, of which the following is a specification.

My invention has relation to improvements on the construction shown in the patent to Walter S. Adams, No. 529,688, dated November 27, 1894. The construction shown in that patent involves the use of a motor-supporting frame, which comprises cross-bars secured to the side bars of the axle-box frame, hangers depending from said cross-bars, and longitudinal bars secured to the hangers, the ends of which are detachably secured to the motor, each of the bars being rigidly secured to the hangers and which do not permit of any movement of said longitudinal bars in relation either to the motor or to the hangers or cross-bars which supported them. My improvements, although resembling said structure in many particulars, differ materially therefrom, in that the longitudinal bars for each motor are separate and disconnected from those for the other motor and from each other.

In my construction I employ the cross-bars, hangers depending therefrom, and instead of employing the fixed longitudinal bars of the Adams structure and their zigzag conformation, which enables the right and left hand motors to be secured, I movably secure short longitudinal bars to the hangers between the extremes thereof, one end being movably connected with the motor, the other end being movably connected with one of the cross-bars. By this construction I enable the motor to lose some of its motion in the bars, which support them or it, and at the same time provide a structure easily assembled and disassembled, which will allow of ready repair should any of the parts become broken, and a ready adjustment of the motors thereto.

My invention therefore consists in the construction and combination of parts hereinafter described and further pointed out in the claims.

In the drawings forming part of this speci-

fication, Figure 1 is a plan view of a portion of a truck and a motor thereon, these parts being diagrammatically illustrated with my motor-supporting frame secured thereto and to the motor; Fig. 2, a longitudinal sectional elevation approximately on the line 2, Fig. 1; Fig. 3, a transverse sectional elevation on the line 3, Fig. 1; Fig. 4, an enlarged elevation of a portion of the cross-bar, side bar of the axle-box frame, and spring-support for the cross-bar on the side bar; Fig. 5, a sectional elevation showing the said support; and Fig. 6, an enlarged side elevation of a portion of the hanger and the longitudinal bar, showing its connection with the hanger.

Similar numerals of reference indicate like parts throughout the several views.

I shall first describe the means for supporting the cross-bars and the hangers, which may be substantially the same as those described and illustrated in the before-mentioned patent.

At 4 are the wheels and 5 the axles of the truck, upon which one or more motors 6 are secured in the usual way, which permits of a rotation of the free end of the motor about the axle, and at 7 is the casing for the field-magnets and armature.

Upon axle-boxes of a suitable construction (not shown) is suspended an axle-box frame, which preserves the parallelism of the axles and which has yokes forming pedestals for the axle-boxes, which comprises in this case side bars 8, intermediate yokes 9, forming the pedestals for the axle-boxes, and cross-bars 10, said axle-box frame being formed of a single homogeneous piece of metal, as shown in the patent to John A. Brill, No. 492,525, dated February 28, 1893, to which cross-reference is here made, or otherwise, as desired.

Upon the side bars 8 rest spring-cushions 11, which may be either in the form of rubber blocks or spiral springs, and upon these cushions rests the flat end 12 of the cross-bars 13, the cross-bars in this case being dropped below the plane of the part 12 by means of the twisted and downwardly-bent neck 14.

For elastically supporting the cross-bars from the side bars I have illustrated the form of elastic cushion shown in the patent to Adams before recited, which, however, may



or may not be employed, and an elastic support for the cross-bars may be omitted altogether without departing from the spirit of my invention. The construction of this elastic support is as follows: At the desired point of location for the cross-bar the side bar 8 is apertured, through which aperture extends a headed bolt 15, its nut 16 engaging the bottom of the side bar and its enlarged head 17 engaging a cap 18, which rests upon the top of the rubber cushion 11. The cushion is seated in a plate 19, which in turn rests upon the top of the side bar 8, and between the plate 19 and the plate 12 of the cross-bar, which latter rests upon the cap 18, extend tie and guide bolts 20, which secure the plates 12 and 19 together, and at the same time allow the plate 12 of the cross-bar to move up and down thereon and form restraining guides for the movement of the cap 18, the latter being provided with grooves, as shown in Fig. 5, in which the bolts 20 lie.

Thus far my invention does not differ materially from the construction disclosed in the patent to Adams aforesaid, the object of my invention being to support the motor upon this supplemental frame by bars entirely independent of each other, and movably support these latter bars.

I secure to the cross-bars 13 at the desired points, which of course is determined by the width of the motor-casing, reversed hangers 21 having one flat face 22 secured to the cross-bar, as shown in Fig. 3, and a lip 23 resting on top of the cross-bar, as shown in Figs. 1 and 2, and a face 24 lying in a plane at right angles to the cross-bar, which is effected by twisting the hanger, as at 25, the face 24 being provided with a lip 26, through which face 24 passes a strong stud 27, projecting from and securely fastened to the face 24 of the hanger, which stud may be provided with a nut or enlargement on the end, if desired. The hangers depend below the cross-bars to a degree determined by the desired elevation or depression of the motor-casing, and as this form of suspension is designed especially for the support of a motor which is provided with lugs 29 on the side of its casing the position of these lugs will of course determine the amount of drop of the hangers.

At 30 are the independent longitudinal bars, each bar being provided between its extremes with a slot 31, and at the end 32, which is to embrace and engage the motor, it is provided with a hole 32<sup>a</sup> large enough to take the lug 29 on the motor-casing, the other end of the bar being provided with an outwardly-extending goose-neck 33 having a rounded nose 34 at its extreme, which nose passes through a hole 35 formed at the proper point in the cross-bar. As shown, each one of these longitudinal bars passes through the cross-bar at one end, engages the stud on the hanger by means of the slot 31, normally rests upon the lower lip 26 thereof, and at the other extreme movably engages the motor and its

casing by means of the hole 32<sup>a</sup> formed therein, and in this way the weight of the motor is taken on the independent longitudinal bars, each capable of having movement conjointly or independently of the other, which bars are supported upon the hangers, which with the cross-bars form a supplemental and centrally-located motor-supporting frame suspended solely by the side beams of the truck, the connection between the longitudinal bars of the supplemental frame and the motor being had between the extremes or the front and rear ends respectively of the latter, thus in a measure relieving the axle of the weight of the motor and confining the motions of the frame to that of the motor itself instead of causing it to partake of the movements of the car-body.

I prefer that the slot 31 should be larger than the diameter of the stud 27, so that the longitudinal bar can have not only a longitudinal motion on the lip 26 of the hanger, but also a vibrational motion to a limited extent thereon, the strain on the bar being taken by the lip 26, the stud limiting and guiding the movements of the bar, and I also prefer that the hole 35 in the cross-bar 13 should be sufficiently large to allow of a free play of the nose 34 therein, so as to permit of vibrational as well as longitudinal play of the bar 30, and that the connection 32 of said bar be such that the lug on the motor can rotate to a limited extent within the hole 32<sup>a</sup>.

From the foregoing construction it will be apparent that the motor-supporting frame is very readily assembled and disassembled, and should one of the longitudinal bars break or become bent it does not necessitate the removal of the entire frame, but each one of the bars can be separately removed or replaced without affecting the condition or position of the other parts of the frame.

To strengthen the frame longitudinally I prefer to employ tie-bolts 36, which pass through apertures 37 in the cross-bars and which are provided with lock-nuts, as shown in Fig. 1, to tie the cross-bars together.

By the use of my construction the motor can be readily dismantled from the supporting-frame, and the adjustment of the said frame to accommodate it to motor-casings of varying widths can be readily had by merely adjusting the hangers on the cross-bars to suit the necessities of the case.

It is apparent that my invention can be otherwise embodied than in the particular details of construction herein shown and described without departing from the spirit thereof.

Having described my invention, I claim—

1. The combination with a truck-frame, a pair of wheels therefor, their axle, of a centrally-located motor-supporting frame suspended solely by the side beams of the truck-frame, longitudinally-arranged and independent bars included in the motor-frame, an electric motor centered on the axle at one end



and movably connected between its front and rear ends with the said longitudinally-arranged bars, said bars being movably secured to said motor-frame, substantially as described.

2. The combination with the truck-frame, a pair of wheels, their axle, a centrally-located motor-supporting frame suspended solely by the side beams of the truck-frame, said motor-frame including independent longitudinal bars movably connected therewith, an electric motor centered on the axle and connected between its front and rear ends with the said longitudinally-arranged bars, substantially as described.

3. The combination, in a truck, of a truck-frame, a separate motor-suspension frame, longitudinal bars included in said frame and movably supported thereby, said motor-frame being suspended between the side bars and wheels of the truck, extending longitudinally of the truck and having its sole support on said side bars, a motor supported at one end by one of the axles of the truck, the motor and said longitudinal bars being connected at a point within the outer limits of the motor or its casing, whereby a portion of the weight of the motor may be taken upon the ends of said longitudinal bars and the truck-axle relieved therefrom, and the bars allow of a limited vibration of the motor on the axle, substantially as described.

4. An electric motor sustained upon a truck and beneath the body of a car or vehicle by a pair of longitudinal bars, cross-bars secured to the side bars of the truck between the wheels, hangers depending from the cross-bars, the longitudinal bars having a movable support upon said hangers and a movable connection with the cross-bar, the motor being detachably secured to the cross-bars at their ends, the end of the motor opposing such connection being geared to and carried upon one of the axles of the truck-wheels, substantially as described.

5. In a motor-truck having a frame and a cross-bar included therein, the combination with one of the truck-axles of a motor geared thereto, a longitudinal motor-frame, the motor-frame being suspended from the cross-bar below the mutual center line of the truck-axles, movable elements secured in said supporting-frame, the motor and said movable elements being connected at a point within the outer limits of the motor or its casing, and below its armature-shaft, substantially as described.

6. The combination, with the truck, of the truck side bars, a motor partly supported on one of its axles, the cross-bars, the hangers on the cross-bars, the longitudinal bars movably supported on the hangers and movably connected with the cross-bars, the motor engaging the proximate ends of the longitudinal bars, substantially as described.

7. The combination of the truck-frame, the wheels and axles, cross-bars secured to the

side beams of the truck between the axles, hangers suspended from the cross-bars, longitudinally-arranged bars movably supported intermediate of their extremes on the hangers, one end of the said longitudinal bars being movably connected with one of the cross-bars, a motor centered upon one of the axles and detachably connected with the other end of said longitudinal bars, substantially as described.

8. In a motor-truck, the combination, with a truck-frame, of the cross-bars, the hangers depending therefrom, the longitudinal bars supported upon the hangers and movably connected therewith between their ends, the ends of the longitudinal bars extending beyond the cross-bars, one end being movably secured to another of the cross-bars, the other end being adapted to be detachably secured to the motor, substantially as described.

9. The combination, with the side bars of the truck, of the cross-bar extending between the side bars, hangers depending from the cross-bars, the longitudinal bar having the stud and slotted connection with the hanger, another cross-bar, and means for movably securing one end of the longitudinal bar to the latter cross-bar, substantially as described.

10. The combination with the side bars of the truck, a cross-bar supported thereon, a hanger depending from the cross-bar having an outwardly-extending lip, a stud on said hanger, and a bar having a slot, the bar normally resting on said lip, the slot engaging said stud, another cross-bar, and means for movably securing one end of the bar with the latter cross-bar, substantially as described.

11. The combination, with the side bars of the truck, of the cross-bars, hangers depending from the cross-bars, longitudinal bars movably supported by said hangers below said cross-bars, each of said cross-bars having an upwardly-extending end movably engaging the opposing cross-bar, substantially as described.

12. The combination, with the side bars, of a cross-bar thereon, the hangers depending from the cross-bars and provided with an outwardly-projecting stud, a lip on the hangers, a bar having a slot engaging said stud, another cross-bar, an aperture therein, one end of said bar engaging said aperture, substantially as described.

13. The combination, with the side bars, of the cross-bar supported thereon, hangers suspended from one of the cross-bars below said cross-bars, a longitudinal bar supported by said hangers and movably connected therewith below said cross-bars, another cross-bar, said longitudinal bar being movably connected at one end above its connection with the hanger to the latter cross-bar, substantially as described.

14. The combination, with the side bars of the truck, of a cross-bar supported thereon, hangers depending from the cross-bar, a lip



on the hanger, a stud on the hanger above  
the lip, a longitudinal bar having a slot inter-  
mediate its ends engaging said stud and rest-  
ing on said lip, another cross-bar, an aper-  
5 ture therein, one end of the longitudinal bar  
being rounded and passing through said ap-  
erture, the other end being adapted to engage  
a motor, substantially as described.

Signed at New Britain, in the county of  
Hartford and State of Connecticut, this 19th 10  
day of April, 1895.

EDWIN S. BREED.

Witnesses:

BENJAMIN H. ROGERS,  
WALTER P. DRESSER.