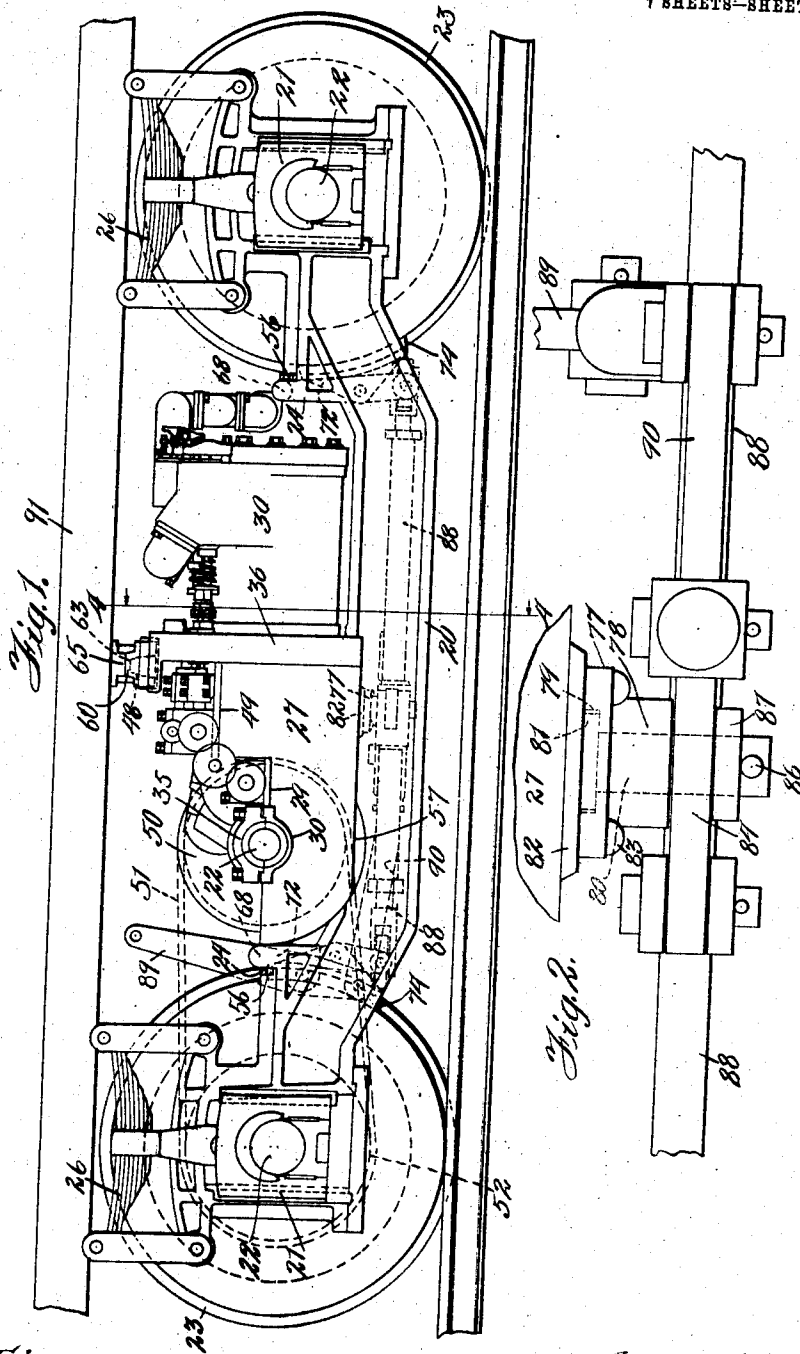


J. G. SARVENT.  
CAR TRUCK.

APPLICATION FILED JULY 25, 1907.

Patented Oct. 27, 1908.  
7 SHEETS—SHEET 1.

902,172.



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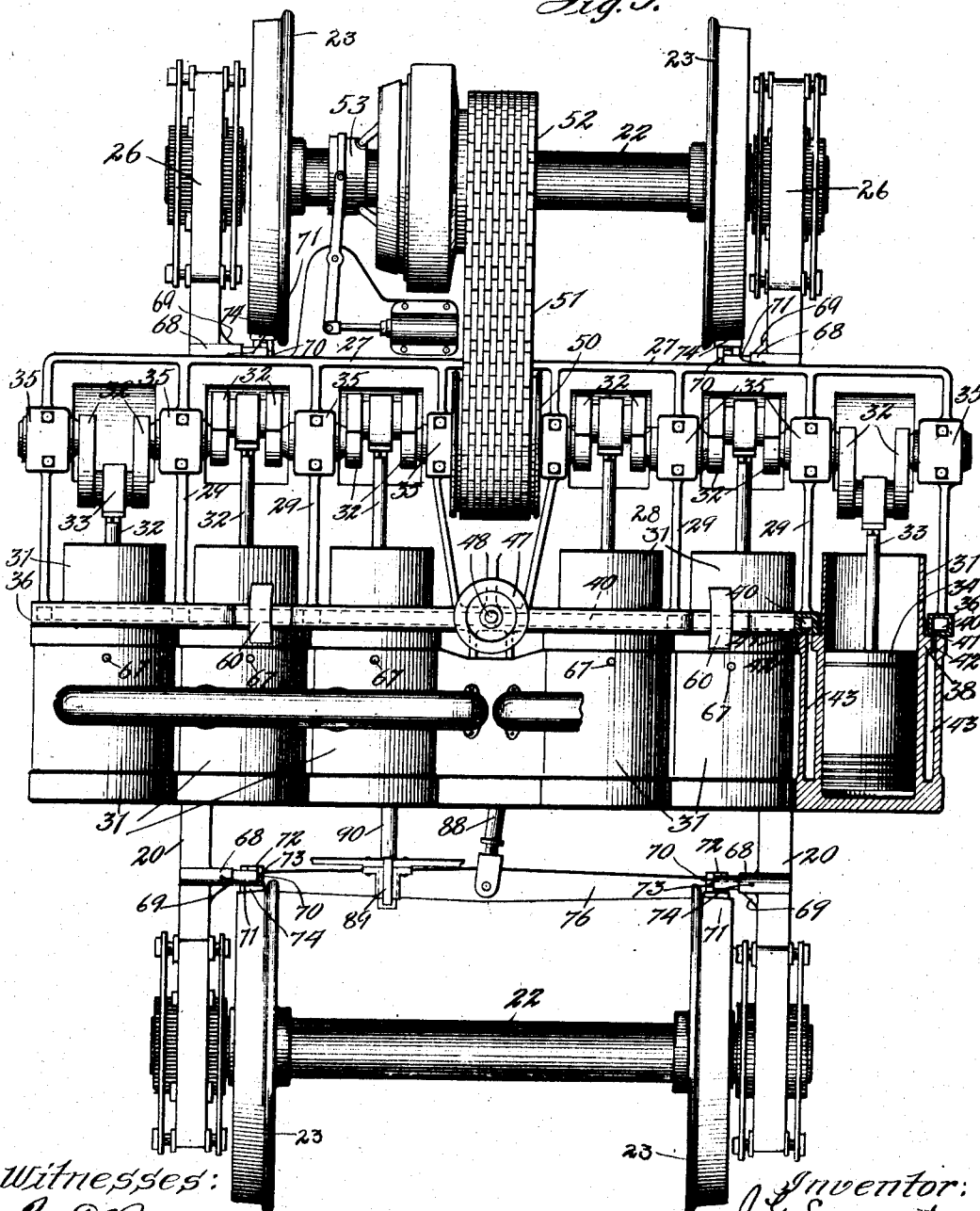
APPLICATION FILED JULY 26, 1907.

Patented Oct. 27, 1908.

7 SHEETS—SHEET 2.

902,172.

Fig. 3.



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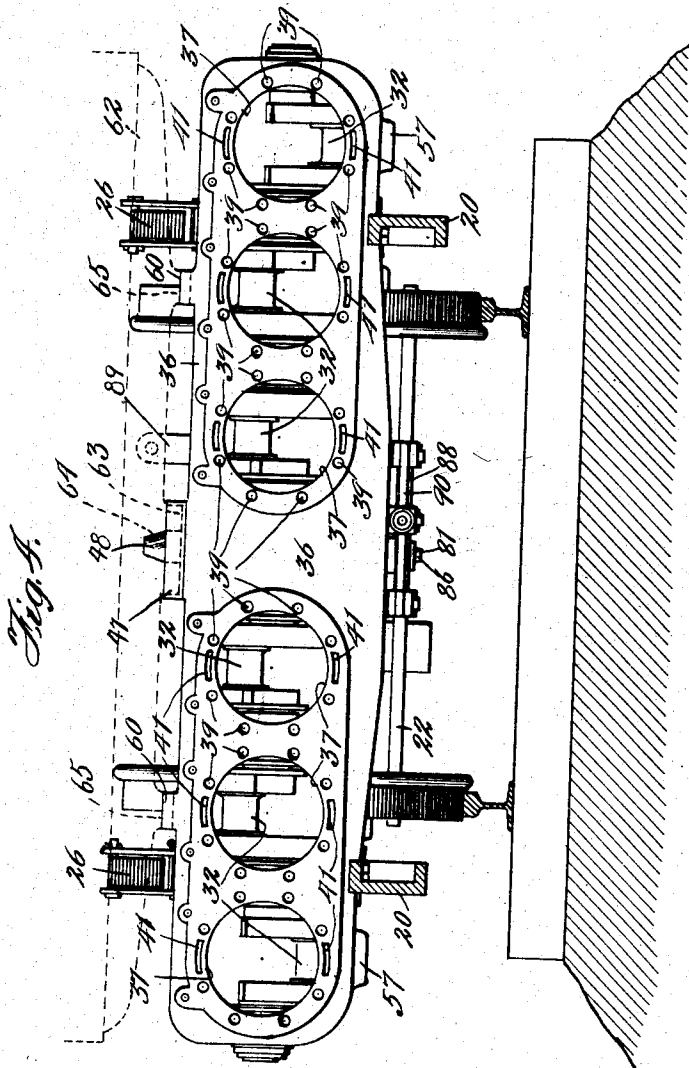
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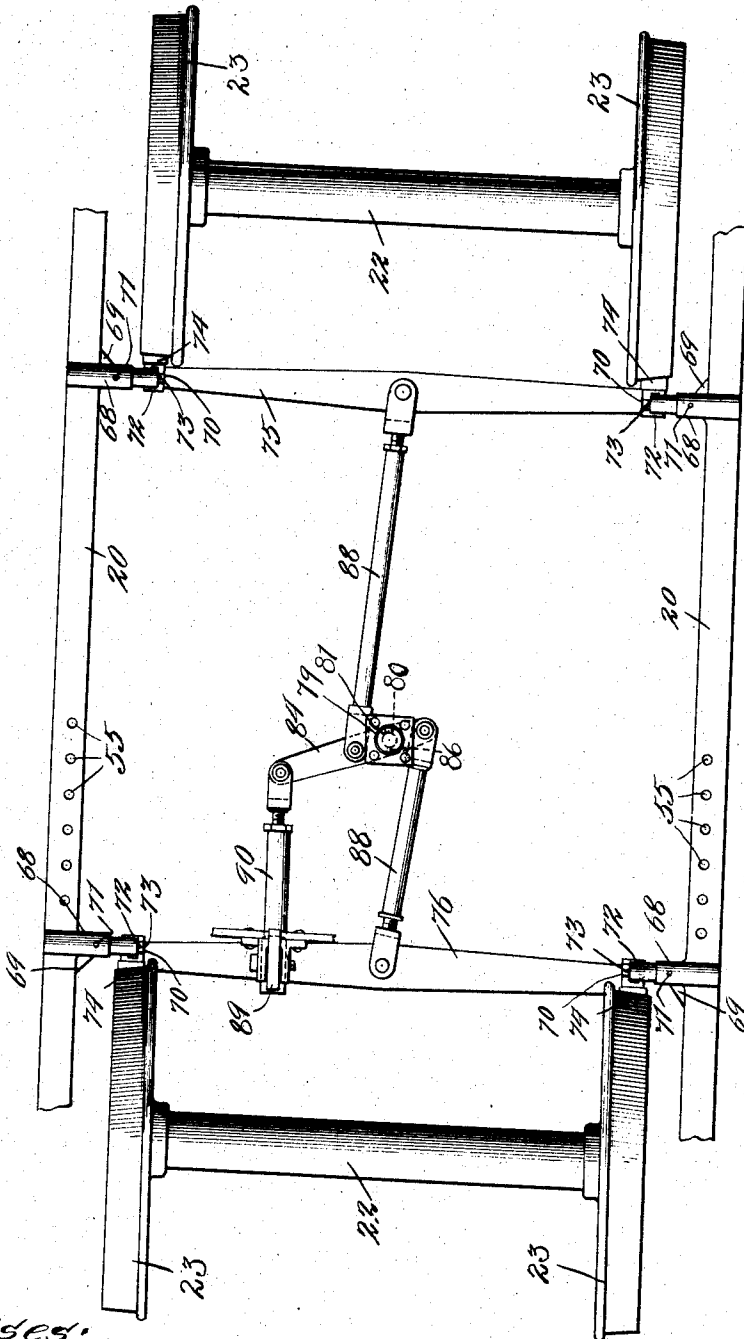
J. G. SARVENT.  
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7 SHEETS—SHEET 6.

902,172.

Fig. 9.



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Patented Oct. 27, 1908.

7 SHEETS—SHEET 5.

902,172.

Fig. 7.

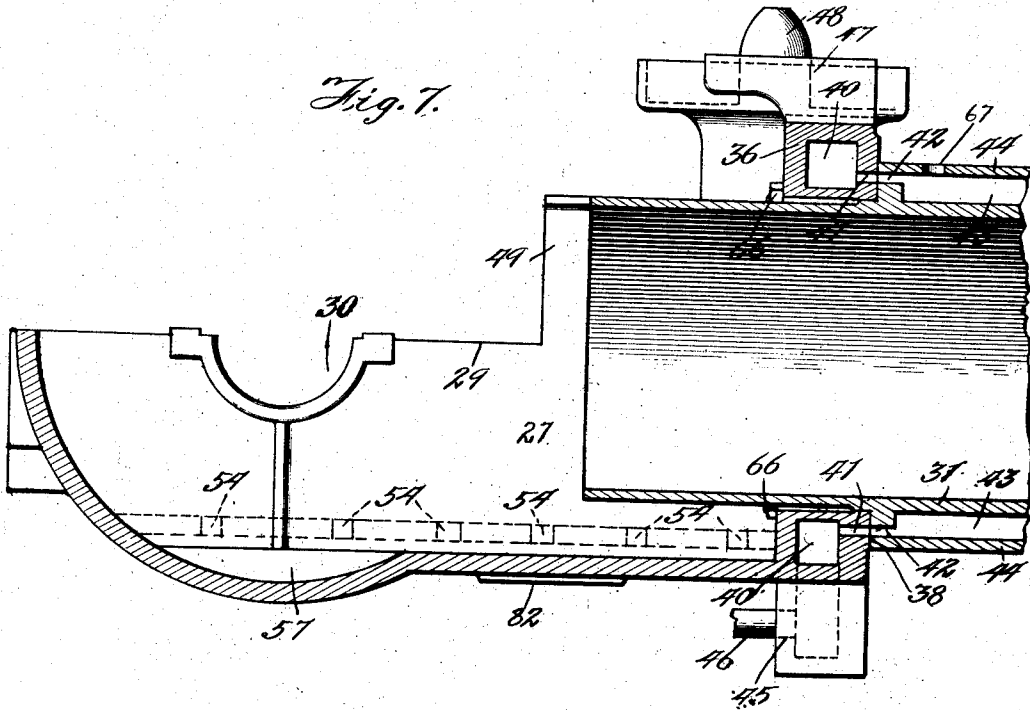
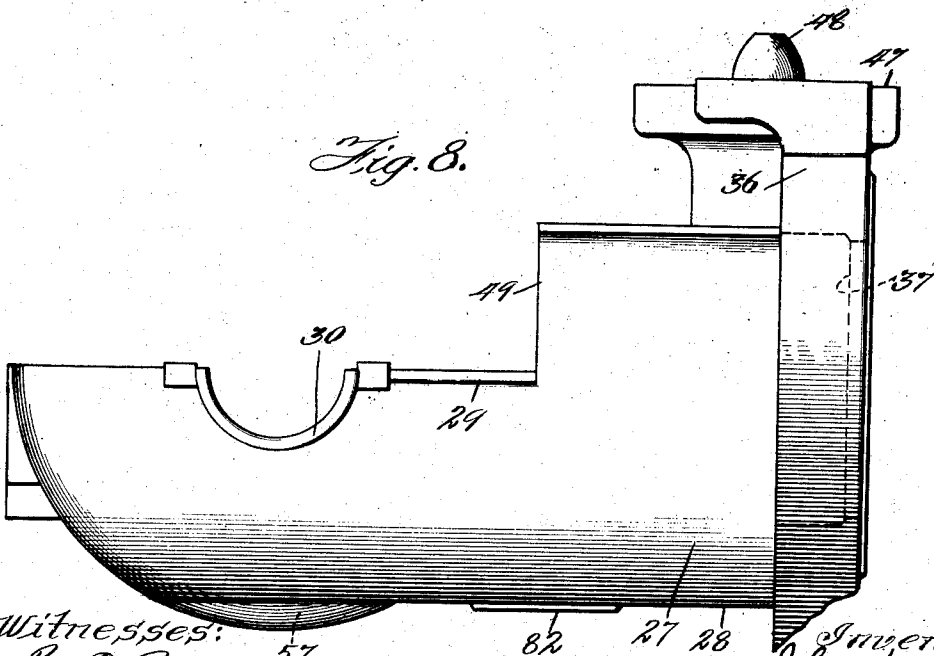


Fig. 8.



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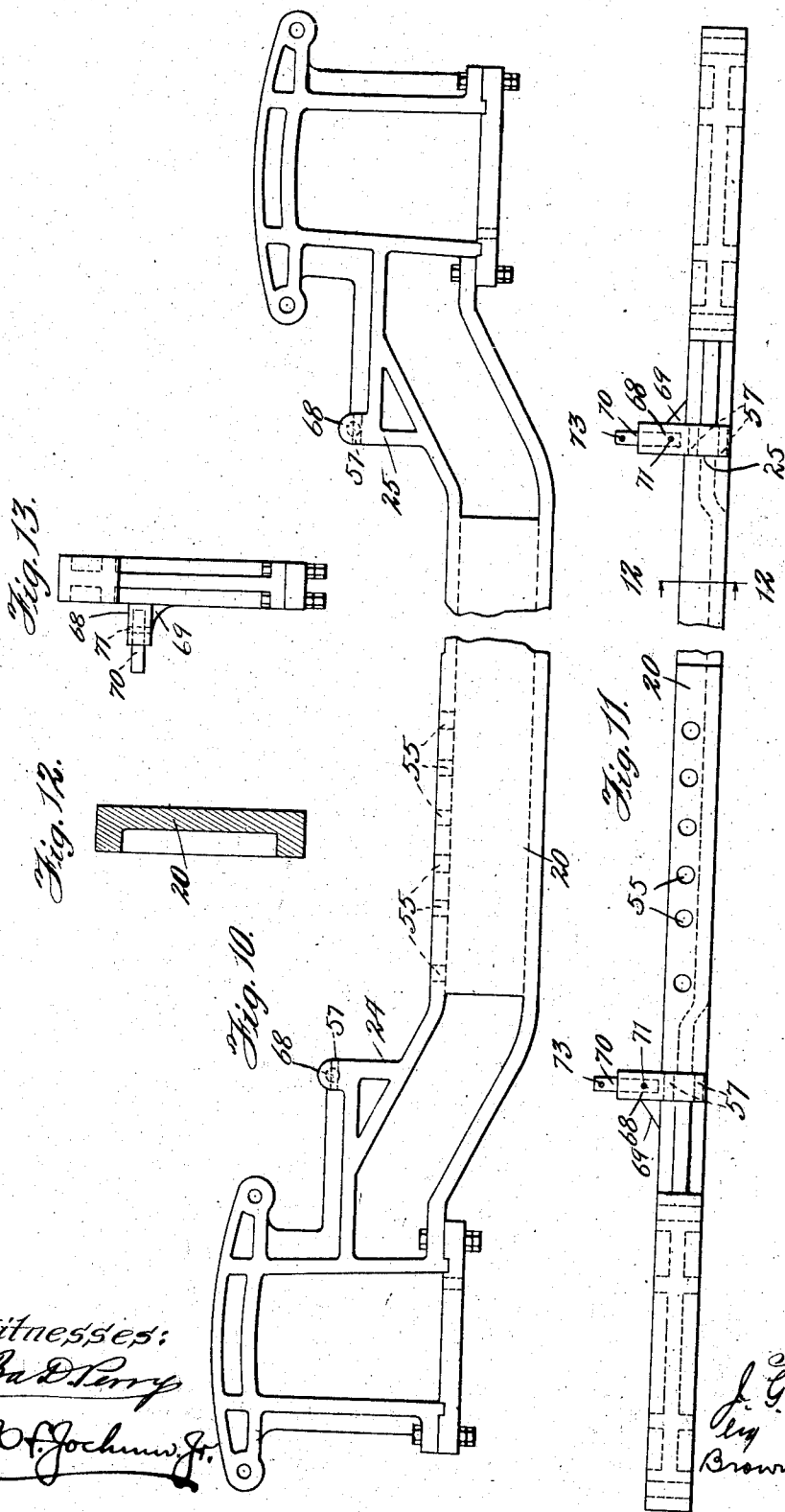
CAR TRUCK.

APPLICATION FILED JULY 25, 1907.

902,172.

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7 SHEETS—SHEET 7.



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# UNITED STATES PATENT OFFICE.

JOSEPH G. SARVENT, OF CHICAGO, ILLINOIS.

## CAR-TRUCK.

No. 902,172.

Specification of Letters Patent.

Patented Oct. 27, 1908.

Application filed July 25, 1907. Serial No. 385,499.

To all whom it may concern:

Be it known that I, JOSEPH G. SARVENT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car-Trucks, of which the following is a specification.

This invention relates to improvements in car trucks, and the primary object of the same is to provide an improved truck so constructed that the motor may be mounted directly thereon without altering the present or standard construction of car body.

A further object is to provide an improved truck upon which the motor may be mounted in a horizontal position to permit a motor of the required capacity to be used.

A further object is to provide an improved combined engine frame and bolster.

A further object is to provide improved means for supporting the brake rigging by the motor frame.

A further object is to provide improved means for cooling the engine frame and the cylinders.

A further object is to provide an improved device of this character which will be simple, durable and cheap in construction and effective and efficient in operation.

To the attainment of these ends and the accomplishment of other new and useful objects as will appear, the invention consists in the features of novelty in the construction, combination and arrangement of the several parts hereinafter more fully described and claimed, and shown in the accompanying drawings illustrating an exemplification of the invention, and in which—

Figure 1 is a side elevation of an improved car truck having the motor mounted thereon in accordance with the principles of this invention. Fig. 2 is a detail view of a portion of a brake rigging and the support therefor. Fig. 3 is a top plan view, partly in section, of Fig. 1, with the car bottom removed. Fig. 4 is a view taken on line 4—4 of Fig. 1, with the engine cylinders removed. Fig. 5 is a detail top plan view of the combined engine frame and bolster. Fig. 6 is an end elevation of Fig. 5. Fig. 7 is a detail sectional view on line 7—7 of Fig. 5, with a portion of one of the engine cylinders in position. Fig. 8 is a side elevation of the engine frame and bolster. Fig. 9 is a bottom plan view of the brake rigging. Fig. 10 is a side elevation of one of the side

beams. Fig. 11 is a top plan view of Fig. 10. Fig. 12 is a detail sectional view on line 12—12 of Fig. 11. Fig. 13 is an end elevation of Fig. 10.

Referring more particularly to the drawings, the numeral 20 designates the side beams or frame of the truck, mounted at the ends of which are bearings 21 in which are journaled the extremities of the axle 22, which support the wheels 23 in the ordinary and well known manner.

The body portion of the side beams or frame is depressed below the axles 22 and is provided with shoulders or projections 24—25, which extend above the upper face of the side beams and are preferably located in the same plane thereof, and supported by the extremities of the side beams or frames 20 and connected thereto in any suitable manner are springs 26, which form a yielding support for the side beams.

The engine frame comprises a body portion 27, preferably formed of a single casting having a bottom 28 and spaced side walls 29, and each of the side walls 29 is provided with an open bearing 30 preferably adjacent the forward extremity of the engine frame. This engine frame may be of any desired size to accommodate any number of cylinders 31, and in the present exemplification of the invention six cylinders are shown, one extremity of each of the cylinders 31 being located between two of the side walls or partitions 29, and mounted in the bearings 30, which bearings are preferably all aligned with each other, is a shaft provided with a plurality of cranks 32, each of the cranks being connected by means of a suitable piston rod 33 to a piston 34, movable in the engine cylinders 31. A cap 35 is provided for each of the bearings 30 to prevent accidental displacement of the crank shaft, in the ordinary and well known manner.

Integral with the end of the engine frame, remote from the bearings 30 and extending entirely across the frame, is a bolster 36, and said bolster is provided with a plurality of apertures 37, one for each of the engine cylinders 31. The forward extremities of the engine cylinders project through the apertures 37 and beyond the opposite face of the bolster, and said engine cylinders are preferably provided with a suitable shoulder 38 which is adapted to engage and rest against the opposite face of the bolster 36

and are secured to the bolster in any desired or suitable manner, preferably by means of suitable screws or bolts 66 passing through apertures 39 in the bolster and suitable apertures (not shown) in the cylinder in the ordinary and well known manner.

The bolster 36 is hollow, as at 40, as shown more clearly in Figs. 3 and 7 of the drawings, and is provided with a plurality of apertures 41 in one face thereof, preferably the face remote from the bearings 30, and said apertures 41 are adapted to register with suitable apertures 42 which communicate with the water space 43 formed by the jacket 44 of the engine cylinders 31, and the bolster 40 is provided with an inlet opening 45 through which water is adapted to be supplied to the bolster, and the water space 43 of the engine cylinders, and connected to the inlet opening 45 is a pipe 46, shown more clearly in Figs. 7 and 8 of the drawings, and which has a suitable source of water supply (not shown).

The cylinders 31 are preferably arranged in sets of three, located on each side of the center bearing 47, which is formed on the upper edge of the bolster 36, and which bearing 47 is provided with a king pin 48.

The side walls or partitions 29 of the engine frame adjacent the bolster 36 project for some distance above the tops of the walls or partitions adjacent the bearings 30, as at 49, to form a projection for the ends of the engine cylinders 31.

Secured to the crank shaft, preferably midway of its length and adjacent the center bearing 47, is a pulley 50, and passing around said pulley is a belt or drive chain 51, which also passes around a suitable pulley 52 on one of the axles 22, and serves to rotate the axle. A suitable clutch mechanism 53 may be provided for locking the pulley 52 to the axle 22. The engine frame is secured to the side beams 20 in any desired or suitable manner, preferably by means of screws or bolts passing through suitable apertures 54 in the bottom of the engine frame and apertures 55 in the side beams 20, and the frame is also held from displacement by means of bolts or screws 56 which pass through suitable apertures 57 in the shoulders or projections 24 and corresponding apertures in the end of the engine frame. The bottom of the engine frame is provided with recessed or depressed portions 57, which are located adjacent the bearings 30 and are for the purpose of permitting a free movement of the cranks 32 and the connected end of the piston 33. The bottom of the engine frame is also provided with an aperture 59 adjacent the pulley 50, and one of the runs of the belt or drive chain 51 is adapted to pass through the aperture.

Projecting above the upper face of the bolster 36 and located on each side of and

cooperating with the pin 48 are side bearings 60. Secured to the car sill 61 is a bolster projection 62 which is provided with a suitable projection 63 having an aperture 64, and said projection 63 is adapted to be seated in the center bearing 47 so that the pin 48 will enter the aperture 64, and the bolster is provided with projecting portions 65 adapted to rest and move upon the side bearings 60, and said bearings 60 serve to prevent the displacement of the bolster. It will thus be seen that with this improved construction of truck, the bolster and engine frame are formed integrally and both are supported by the side beams 20 of the truck in such a manner as to permit the engine cylinders to be placed upon the truck in a horizontal position so that an engine of the required capacity may be utilized without altering or changing the present construction of the car body or the supporting sills, the engine frame and bolster being supported and rigidly secured to the side beams 20 by means of the fastening bolts, and the cylinders 31 being secured to the bolster by means of the bolts 66, as shown more clearly in Fig. 7 of the drawing.

The water for cooling the bolster and the cylinders is supplied from the cooling coils (not shown), and enters the bolster through the pipes 46, one of which is provided for each cylinder, and from the bolster 36 the water passes into the water space 43 of the cylinders through the communicating openings 41 and 42, and is exhausted from the water space through the outlet openings 67 from where it is conveyed back to the tank (which latter is not shown) in the ordinary way. It will thus be seen that with such a construction, the cooling fluid circulates through the bolster and around the engine cylinders, thereby forming an extended cooling space.

Extending from one of the faces of the side beams 20, preferably the inner face thereof, and located adjacent each of the extremities of the shoulders or projections 24, is a projection 68 which is preferably provided with a reinforcing rib 69. This projection 68 is cored or drilled to form a recess or cavity into which one extremity of a steel pin 70 is driven, as shown more clearly in Figs. 11 and 13 of the drawings, and said pin is held against displacement in any desired or suitable manner, preferably by means of a key or pin 71, which is driven through the projection 68 and the extremity of the pin 70. These pins 70 extend for a short distance beyond the extremities of the projections 68 and form bearings for the brake hangers 72 shown more clearly in Fig. 9 of the drawings, and said hangers are held against accidental displacement by means of suitable cotter pins 73 which pass through the extremities of the pins 70 be-

yond the hangers. The hangers are provided with the ordinary brake shoes 74, which are adapted to engage the peripheries of the supporting wheels 23, and the respective hangers are connected by cross-beams 75, 76. A member 77 is provided with an aperture 78 extending therethrough, and a countersunk portion 79 located adjacent one face thereof and extending through the aperture 78 is a pin 80 which is provided with a headed portion 81 adapted to rest within the countersunk portion 79, and said pin 80 is of such a length as to extend for some distance beyond the member 78. This member 78 is adapted to be secured to a finished face or projecting portion 82 on the engine frame in any desired or suitable manner, preferably by means of bolts or rivets 83, and when in position the pin or bolt 80 is held against accidental displacement by means of the upper portion of the head 81 thereof engaging the bottom of the engine frame. This pin or bolt 80 serves as a support for a lever 84, which is pivotally supported thereby, as shown more clearly in Figs. 2 and 9 of the drawings, and said lever is held against displacement by means of a cotter pin 86, which passes transversely through the extremity of the pin or bolt 80 and below a suitable washer 87 which is disposed beneath the lever 84. Suitable connecting bars or links 88 are pivotally connected respectively by one end to the cross-beams 75, 76, and by their other end to the lever 84 on each side of the point of pivotal support thereof, and serve as means for applying the brake shoes 74 to the peripheries of the respective wheels when the lever 84 is rocked by means of the lever 89, which is connected to the lever 84 through the medium of the connecting link 90 shown more clearly in Fig. 9 of the drawings.

It will thus be seen that with this improved construction, the motor is mounted directly upon the truck, and the truck is so constructed that the engine or motor may be placed horizontally thereon in order to permit a motor of the required capacity to be used. The truck being of the standard size, may be placed under the car sill 91 of the car body without altering or changing the present construction of the car, and when in position, the motor will be supported by the truck below the car sill, thereby permitting an improved truck constructed in accordance with the principles of this invention to be applied to any of the present construction of cars.

In order that the invention might be fully understood by those skilled in the art, the details of the foregoing embodiment thereof have been thus specifically described, but

What I claim as new and desire to secure by Letters Patent is:—

1. The combination of a car truck includ-

ing disconnected side beams, a portion of which are spaced for some distance below the car sill, and a motor frame connecting said beams, said frame being supported directly by the beams, within the spaced portion and entirely below the car sill.

2. The combination of a car truck including disconnected side beams, a portion of which are spaced for some distance below the car sill, a motor supported directly by and connecting said beams to form a part of the truck and located within the spaced portion entirely below the car sill, and means for preventing longitudinal and lateral displacement of the motor with relation to the truck.

3. The combination of a car truck including disconnected spaced side beams each of which is provided with a depressed portion intermediate its ends, and a motor beneath the car sill supported directly by and connecting the side beams.

4. The combination of a car truck including disconnected spaced side beams, the body portions of which are located in a plane below the plane of the car axles, a motor frame supported directly by the beams beneath the car sill and connecting the beams, a motor and means for preventing displacement of the motor.

5. The combination of a car truck including disconnected side beams each having a depressed portion intermediate its ends, a horizontally disposed engine supported directly by the side beams within the depressed portions and means for securing the engine to the side beams and connecting said beams.

6. The combination of a car truck including disconnected spaced side beams, a portion of which are spaced for some distance from the car sill, an engine frame resting upon the side beams, means for securing the engine frame to the side beams and connecting said beams, an engine supported by the frame below the car sill, said engine including a cylinder and a crank shaft, and an operative connection between the crank shaft and one of the truck axles.

7. The combination of a car truck including disconnected side beams, a portion of which are spaced for some distance below the car sill, an engine frame resting upon the side beams, means for securing the frame to the beams and connecting the latter, an engine supported by the frame below the car sill, an operative connection between the engine and one of the truck axles, and a bolster supported by the engine frame.

8. In a device for the purpose described, the combination of a car body, a car truck embodying axles and wheels therefor, side frames spaced below the body and supported at the ends by said axles, and a combined engine frame and bolster having a pivotal support for the car body, extending across

- and projecting outwardly beyond said side frames at a position intermediate the axles, an engine having a plurality of engine cylinders arranged horizontally below the car body and lengthwise of the truck and secured to said combined engine frame and bolster in a position between one of the axles and said combined engine frame and bolster, and a driving connection between one of the axles and said engine.
9. In a device for the purpose described, the combination of a car body, a car truck embodying axles and wheels therefor, side frames spaced below the body and supported at the ends by said axles, and a combined engine frame and bolster having a pivotal support for the car body extending across and projecting outwardly beyond said side frames at a position intermediate the axles, an engine having a plurality of engine cylinders arranged horizontally below the car body and lengthwise of the truck within the horizontal plane of the axles and secured to said combined engine frame and bolster in a position between one of the axles and said combined engine frame and bolster, and an operative connection between one of the axles and said engine frame for driving the axles by the engine.
10. The combination of a car truck including side beams, a portion of which are spaced for some distance from the car sill, an engine frame supported by and secured directly to the beams, an engine supported by the frame, an operative connection between the engine and one of the truck axles, brake hangers supported by the side beams, and operating mechanism for the brakes supported by the engine frame.
11. The combination of a car truck including side beams, a portion of which are spaced for some distance from the car sill, a combined engine frame and bolster supported directly by the side beams, means for securing the frame from displacement, an engine supported by the frame below the car sill, an operative connection between the engine and one of the truck axles, brake hangers supported by the truck and brake rigging supported by the engine frame.
12. The combination of a car truck including side beams, a portion of which are spaced for some distance below the car sill, a combined engine frame and bolster supported directly upon the side beams and extending across the truck, means for securing the frame and bolster against displacement, a plurality of engines supported by the frame and below the car sill, a crank shaft journaled in the engine frame and operatively connected to the engines, an operative connection between the shaft and one of the axles of the truck, brake hangers supported by the side beams and brake rigging supported by and depending from the engine frame.
13. In combination a car truck comprising spaced side beams, and a combined engine frame and bolster secured to and extending across the side beams, said frame being part and parcel of the bolster.
14. A combined integral motor frame and car bolster.
15. A combined integral motor frame and a hollow car bolster.
16. A combined integral motor frame and car bolster, said bolster being provided with a central bearing on the upper face thereof, and an additional bearing surface on each side of and cooperating with the central bearing.
17. A combined integral motor frame and car bolster, said bolster being provided with a central bearing on the upper face thereof, and an additional extended bearing surface on each side of and cooperating with the central bearing.
18. In combination, a combined integral engine frame and car bolster, said bolster being provided with a water space, and an engine cylinder supported by the bolster, said cylinder being provided with a water jacket having communication with the water space in the bolster.
19. In combination a combined integral engine frame and hollow car bolster, and an engine cylinder supported by the bolster and having a water space, said bolster being provided with an aperture to form a communicating passage between the water space and the bolster, and means for securing the cylinder in position.
20. In combination, a combined integral engine frame and hollow car bolster, and an engine cylinder supported by the bolster and having a water space, and means for holding the cylinder in position, said cylinder and bolster being provided with registering apertures in the walls thereof to form a communicating passage, and being also provided with an inlet and an outlet for the water.
21. In a device for the purpose described, the combination of a car body, a car truck embodying axles and wheels therefor, side frames spaced below the body and supported at the ends by said axles, and a combined engine frame and bolster having a pivotal support for the car body extending across and projecting outwardly beyond said side frames at a position intermediate the axles, an engine having a plurality of engine cylinders arranged horizontally below the car body and lengthwise of the truck within the horizontal plane of the axles and secured to said combined engine frame and bolster in a position between one of the axles and said

combined engine frame and bolster, and an operative connection between one of the axles and said engine frame for driving the axles by the engine, said cylinders being arranged in a row projecting laterally beyond the side frames and wheels of the truck.  
5 In testimony whereof I have signed my

name to this specification, in the presence of two subscribing witnesses, on this 20th day of July A. D. 1907.

JOSEPH G. SARVENT.

Witnesses:

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OTTO SCHWEB.