

No. 666,136.

Patented Jan. 15, 1901.

F. E. & C. B. GROUT.  
MOTOR VEHICLE.

(Application filed Sept. 21, 1899.)

(No Model.)

Fig. 1.

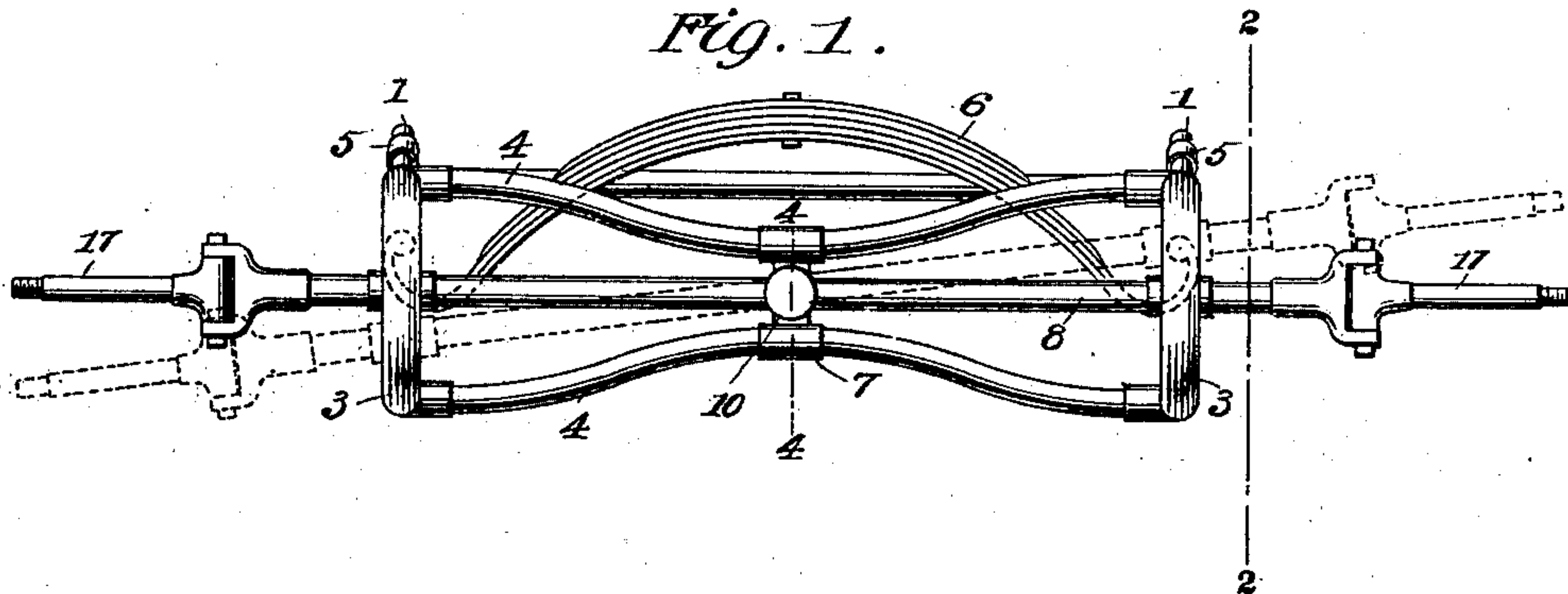


Fig. 2.

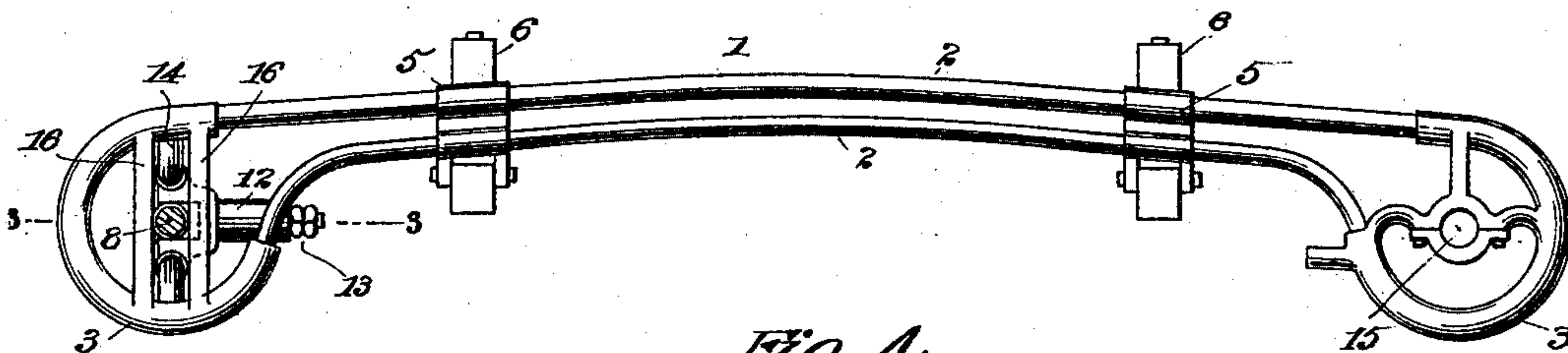


Fig. 4.

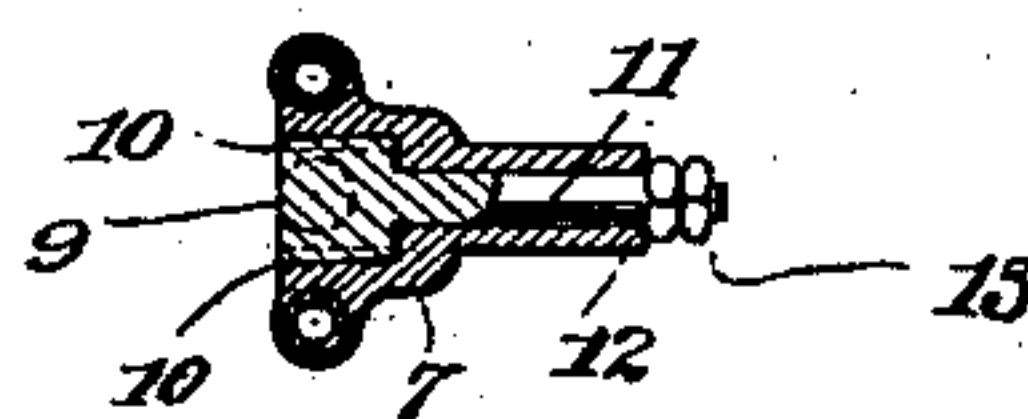
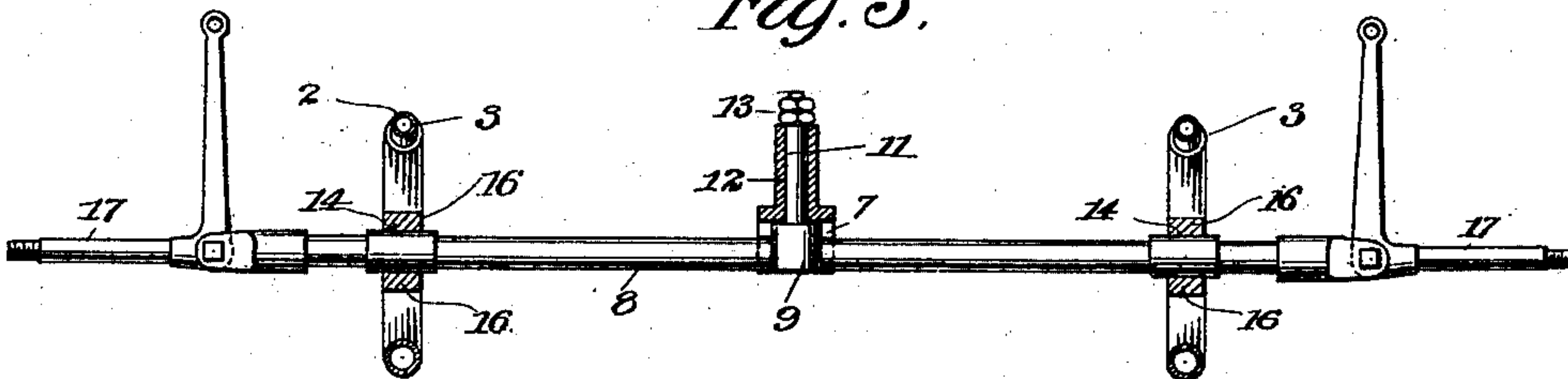


Fig. 3.



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## MOTOR-VEHICLE.

SPECIFICATION forming part of Letters Patent No. 666,136, dated January 15, 1901.

Application filed September 21, 1899. Serial No. 731,172. (No model.)

*To all whom it may concern:*

Be it known that we, FREDERICK E. GROUT and CHARLES B. GROUT, citizens of the United States, and residents of Orange, Franklin county, State of Massachusetts, have invented certain new and useful Improvements in Motor-Vehicles, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

Our invention relates to improvements in motor-vehicles; and it consists in the new and novel construction and combination of parts, as hereinafter set forth in detail, and pointed out in the claims.

Referring to the drawings, in which we have shown only such parts of a vehicle as are necessary to illustrate our invention, Figure 1 represents a front elevation of the vehicle-frame with the carriage-body-supporting springs and front axle in connection therewith; Fig. 2, a side elevation of the same, with the axle in section, through line 2 2 of Fig. 1; Fig. 3, a horizontal section of the frame through line 3 3 of Fig. 2, showing the axle in plan; and Fig. 4, a vertical section through line 4 4 of Fig. 1.

To explain in detail, our improved vehicle-frame, as shown, consists of the two oppositely-located sides 1 1, each of which is formed by two pieces 2 2 of tubing or other suitable material, which constitute upper and lower limbs of the side frame 1 and extend substantially parallel with each other throughout the greater portion of their length and terminate at opposite ends of the frame in loops 3 3. Suitable cross-braces 4 4 4 connect said opposite sides adjacent to the front and rear ends of the same and form a frame which is light and at the same time very strong and rigid. The parallel pieces 2 2 at each side of the frame are also united, and thereby strengthened, by connecting-clips 5 5, to which latter are connected the ends of the transversely-arranged springs 6 6, on which the carriage-body is adapted to be supported.

The two cross-braces 4 4 adjacent to the front end of the frame are arranged one above the other and connected at their center by a so-called "bearing-clip" 7, with which latter the front axle (indicated at 8) is adapted to

be pivotally connected at its center, so as to be capable of having a swinging movement relative to the frame. The connection between the axle and said clip is effected, as herein shown, by means of a bolt 9, secured in fixed connection with said axle, the head of which is journaled between the upper and lower bearing-surfaces 10 10 of the clip 7 and the tail portion 11 thereof extended through a tubular extension 12 of the clip and engaged at its end by a nut 13, as more clearly shown in Figs. 3 and 4. Any suitable means, however, for securing such pivotal connection between the axle and frame other than that shown and described may be employed without departure from our invention.

The ends of the axle extend through vertically-elongated openings or ways 14 14, located in the opposite sides of the frame, within which they are confined and have a limited vertical play or movement. By this construction the front axle normally retains a central horizontal position relative to the frame, as shown in Fig. 1; but in the event of one of the front wheels passing over an obstruction or uneven place in the road the axle tilts, as indicated by dotted lines in Fig. 1, without communicating undue jar or strain to the rest of the vehicle, it being understood that the frame is held in its level or horizontal position by reason of its connection with the rear axle, (not shown in the drawings,) which latter is fitted in bearings 15 in the opposite sides of the frame, so that there is no movement of the frame relative to said axle.

The ways 14 14 in the opposite sides of the frame, as shown, are formed by two vertically-arranged parallel guide-bars 16 16, located within the loops 3 3 at the forward end of the frame. The ends of the axle being confined between these bars 16 16 are firmly held from horizontal or backward and forward movement thereby, the wheel-supporting journals 17 17 being pivotally connected with the ends of the axle and adapted to be operated by suitable connecting controlling mechanism not forming part of our present invention.

Having thus set forth one practical embodiment of our invention, we do not wish to be understood as confining ourselves to the par-



tical details of construction as shown and described, as the same may be more or less materially modified without departure from the spirit of our invention.

5 What we claim, and desire to secure by Letters Patent of the United States, is—

1. A vehicle-frame, comprising side pieces, each having a loop at one end provided with an axle-guide located therein and extending  
10 vertically across the same, and cross-braces uniting said side pieces.

2. In a motor-vehicle, the combination, with one of the axles, of a frame to which said axle is pivoted, comprising the side pieces  
15 having loops at their ends in line with said axle, said loops being each provided with a vertical axle-guide located therein and attached to the upper and lower limbs of the same.

20 3. In a motor-vehicle, the combination, with one of the axles, of a frame to which said axle is pivoted, comprising side pieces each having an upper and a lower limb continuous with each other, said limbs being  
25 more widely separated at their ends in line with said axle to form loops, and guideways for the axle extending vertically across said loops.

30 4. In a motor-vehicle, the combination, with one of the axles, of a frame to which said axle is pivoted, comprising the side pieces having loops at their ends in line with said axle, said loops being each provided with a vertical guide attached to the upper  
35 and lower limbs of the loop, and cross-braces 4, 4, attached respectively to the upper and

lower limbs of said loops and furnishing the support for the axle.

5. In a motor-vehicle, the combination, with one of the axles, of a frame to which  
40 said axle is pivoted, comprising side pieces each having an upper and a lower limb, guides in line with said axle and attached to and connecting said upper and lower limbs, and  
45 cross-braces 4, 4, respectively connecting said upper limbs and lower limbs and provided with the pivotal support for the axle.

6. In a motor-vehicle, the combination, with one of the axles, of a frame to which  
50 said axle is pivoted, comprising side pieces each having an upper and a lower limb continuous with each other, said limbs being more widely separated at their ends in line  
55 with said axle to form loops, guideways for the axle extending vertically across said loops, and cross-braces 4 4 attached respectively to the upper and lower limbs of said loops and furnishing the pivotal support for the axle.

7. In a motor-vehicle the combination, with one of the axles, of cross-braces above  
60 and below and in a vertical plane with the axle and pivotally connected therewith, guideways at the outer ends of, and attached to said upper and lower braces, and side frame-  
65 pieces connected with said braces and guideways and provided with bearings for the other axle.

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