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(54) **TOY MODEL VEHICLES**

(57) **Abstract:**

The present invention concerns toy vehicles.

An object of the invention is to provide a construction of toy vehicles which will give a realistic spring suspension approximating in action to independent springing of the wheels.

Another object of the present invention is to provide a toy vehicle which includes a horizontally extending base plate, at least one transversely extending axle bar mounted in guide-slots for displacement towards or away from the base plate carrying wheels at its opposite ends, and at least one spring urging the axle bar in a downward direction relative to the base plate.

The axle bar may be guided in slotted lugs fixed relative to the vehicle body. The said slotted lugs may be fixed to or formed integral with the base plate in the form of upturned tabs disposed at opposite side edges of the base plate or may be fixed to or formed integral with the body.

The vehicle may be conveniently provided with a plate spring; this spring may have a U-shaped cut-out at the end region thereby providing two separate spring portions adapted to act substantially independently upon the axle bar.

The plate spring may alternatively be formed from the body of the base plate in the manner of a rectangular flap one side of which flap is integral with the body of the base plate.

The toy vehicle may be fitted with at least one pillar formed integral with or riveted to the body and attached to the base plate, said pillar passing through an aperture in the plate spring.

In another embodiment of the invention one or more coil springs are housed in vertically extending cylindrical tubular lugs depending from the body of the vehicle.

In a further embodiment a single coil spring has its upper end fixedly connected with one or more stubs depending from the upper interior

surface of the vehicle body and exerts a downward pressure upon the axle bar which is springably movable in a vertical direction between complementarily opposed guide members.

The foregoing and other objects and advantages will appear from the following detailed description, taken in connection with the accompanying drawings, in which:-

Fig. 1 is a fragmentary perspective view of one embodiment;

Fig. 2 is a detail in side elevation;

Fig. 3 is a plan corresponding to Fig. 2;

Figs. 4 and 5 are perspective views of alternative embodiments;

Figs. 6 and 7 are exploded perspective views of two further embodiments.

The model illustrated in Figs. 1, 2 and 3 has front and rear axles each in the form of a bar 11. Each axle bar 11 passes through a central bore in one of the wheels 12, 12a, the bore being of a sufficient size to permit the wheel to rotate freely on the axle bar. The axle bar 11 immediately adjacent to the wheel passes through a guide slot 14, 14a in a lug 15, 15a which is bent upwardly at 90° from the body of the base plate 16. A plate spring 17 is riveted in a central position at 18 to the base plate 16. At the front end of the vehicle this spring 17 has a bore 19 which clears a pillar 20 by means of which the base plate 16 is attached to the upper internal portion 21 of the body. The plate spring 17 urges the axle bar 11 in a downward direction into the position shown in Figs. 1 and 2.

In the embodiment shown in Fig. 4, the plate spring 17 has U-shaped cut-outs 22, 22a providing two separate spring portions 23, 23a which exert a substantially independent downward pressure on the axle bar 11.

In Fig. 5 the springing action is provided by a flap 16a cut into the body of the base plate 16 and integrally joined to said base plate 16 at 16b.

Fig. 6 illustrates an embodiment using coil springing. Cylindrical tubular lugs 26, 26a secured to the inside of the vehicle body have vertical slots 27, 27a arranged to permit the vertical movement of the axle bar 11 inserted therein. The axle bar 11 is subjected to a downward pressure by coil springs 25, 25a housed within the tubular lugs 26, 26a and positioned above the axle bar 11. The axle bar 11 is retained within the slots 27, 27a by the upward pressure of the base plate 16.

Fig. 7 illustrates an embodiment in which a single coil spring 25 has its upper end fixedly connected to three closely grouped stubs 29 depending from the upper interior surface of the vehicle body and exerts a downward pressure upon the centre region of the axle bar 11 which axle bar 11 is movable in a vertical direction between complementarily opposed guide members 28.

The foregoing and other changes may be made without departing from the scope and spirit of the present invention. Accordingly, it is to be understood that the detailed description presented herein is merely illustrative of the invention and is not to be construed as limiting the scope thereof.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:-

1. A toy vehicle comprising in combination a body portion, a base plate connected to said body portion, guide members provided on said base plate, at least one transversely extending axle bar mounted in said guide members and carrying wheels at the opposite ends thereof, and at least one spring, engaging said axle bar, adapted to urge said axle bar in a direction towards said base plate.

2. A toy vehicle according to claim 1, wherein the axle bar is guided in slotted lugs fixed relative to said vehicle body.

3. A toy vehicle according to claim 1, wherein the axle bar is guided in slotted lugs fixed to the base plate.

4. A toy vehicle according to claim 1, wherein the axle bar is guided in slotted lugs formed integral with the base plate.

5. A toy vehicle comprising in combination a body portion, a base plate connected to said body portion, guide members provided on said base plate, two parallel transversely extending axle bars mounted in said guide members and carrying wheels at the opposite ends thereof, and a plate spring secured to said base plate and positioned thereabove adapted to engage said axle bars and thereby urge said bars towards said base plate, said plate spring having a U-shaped cut out at each longitudinal extremity thereby providing two separate spring portions adapted to act substantially independently upon each axle bar.

6. A toy vehicle comprising in combination a body portion, a base plate connected to said body portion, guide members provided on said base plate, two parallel transversely extending axle bars mounted in said guide members and carrying wheels at the opposite ends thereof, and two plate springs formed from the base plate itself each in the manner of a rectangular flap, one side of each of said flaps being integral with said base plate.

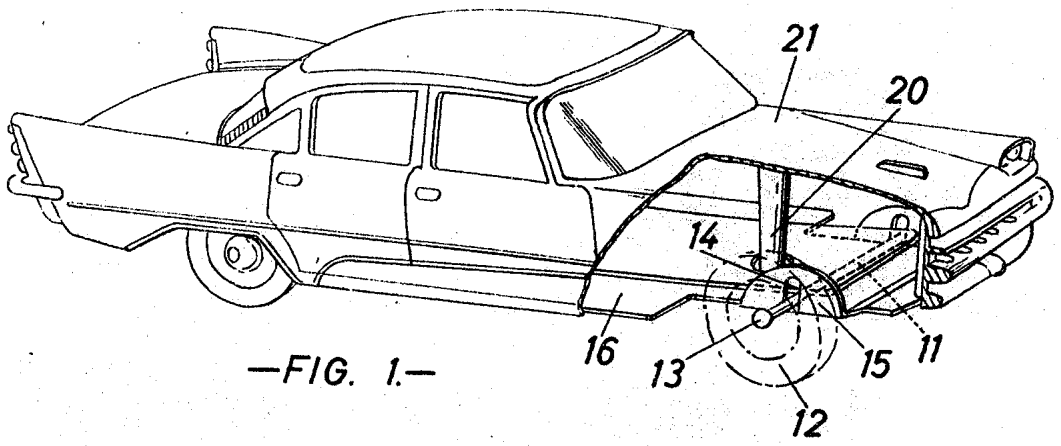
7. A toy vehicle comprising in combination a body portion, a base plate connected to said body portion by means of rivets, a plurality of depending cylindrical tubular vertically slotted lugs, transversely extending axle bars arranged within said slots of said lugs, and a coil spring mounted in each cylindrical lug, each said spring adapted to contact one of said axles to urge said axles towards said base plate.

8. A toy vehicle comprising in combination a body portion, a base plate connected to said body portion, guide members arranged on said base plate, a wheel axle in contact with said base plate disposed in said guide members, and a vertical coil spring engaging at its lower end of said wheel axle, said coil spring being held in position at its upper end by a plurality of stubs depending from the inner surface of said body portion.

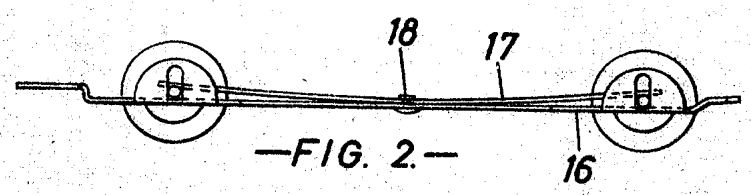
9. A toy vehicle according to claim 1, wherein said body portion is secured to said base plate by means of a pillar which passes through an aperture in the plate spring, and said plate spring is riveted to said base plate.

10. A toy vehicle according to claim 1, wherein said guide members are in the form of upwardly bent tabs having slots therein.

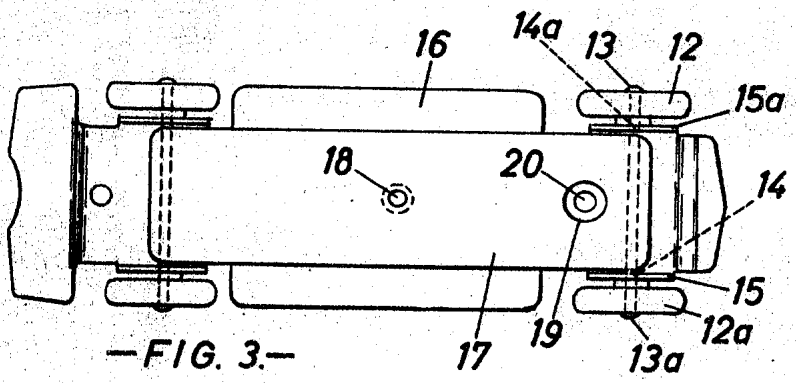
11. A toy vehicle according to claim 1, wherein two axles are arranged parallel to one another and each axle carried two wheels.



—FIG. 1.—



—FIG. 2.—



—FIG. 3.—

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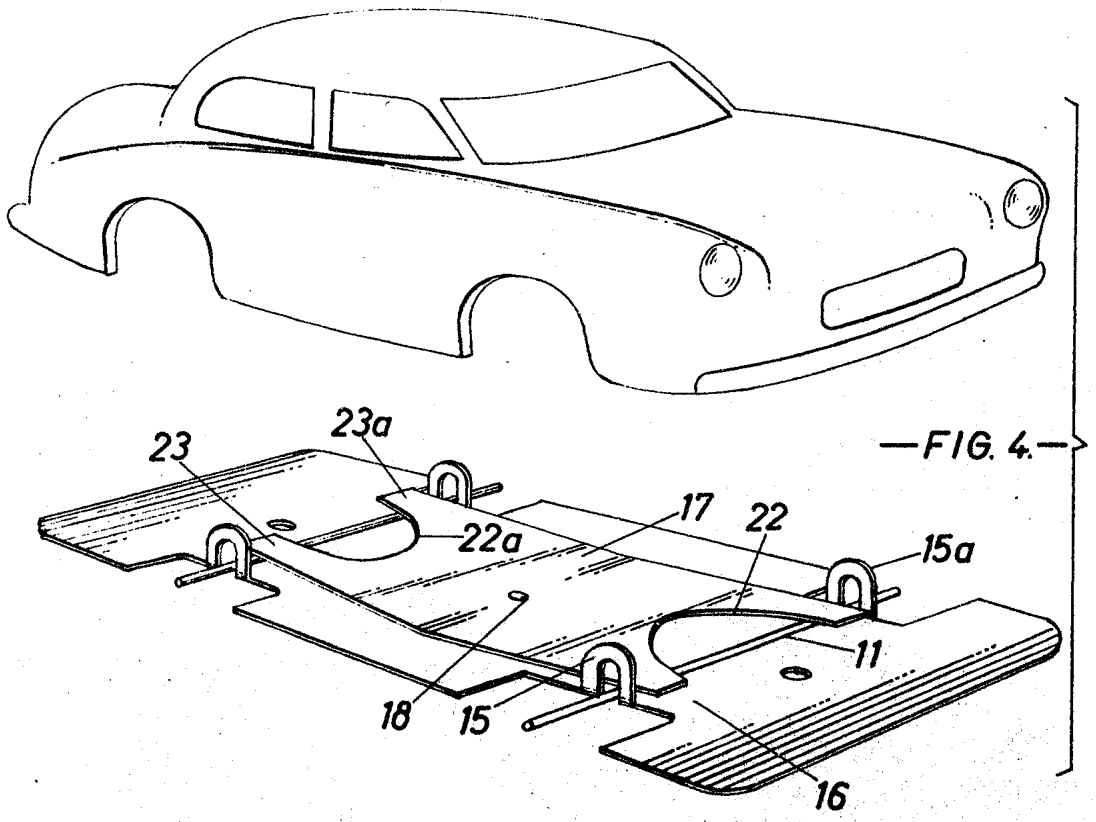
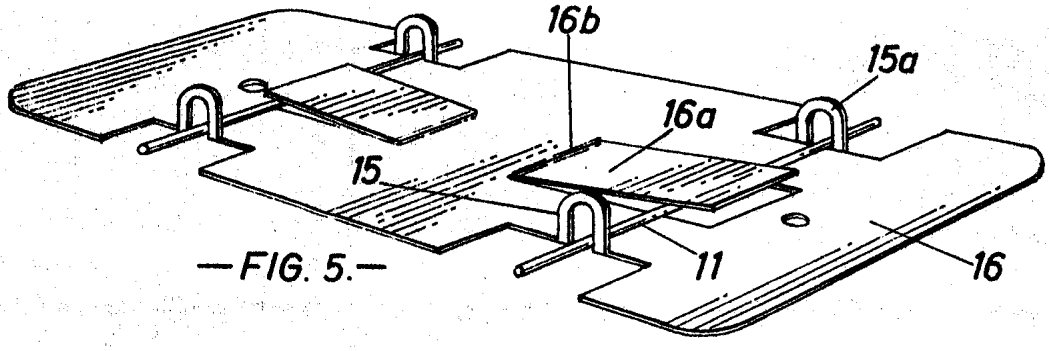


—FIG. 4.—



—FIG. 5.—

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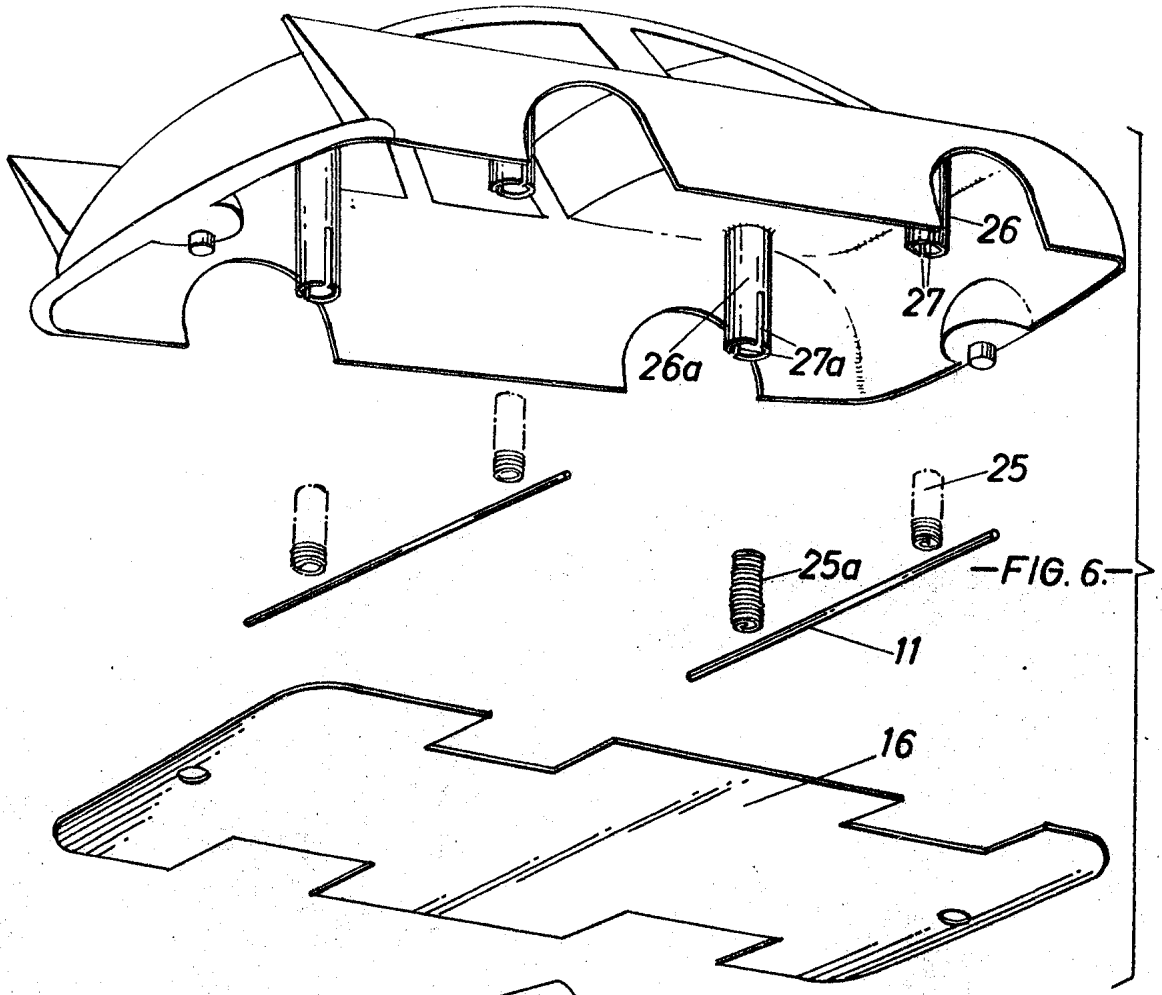
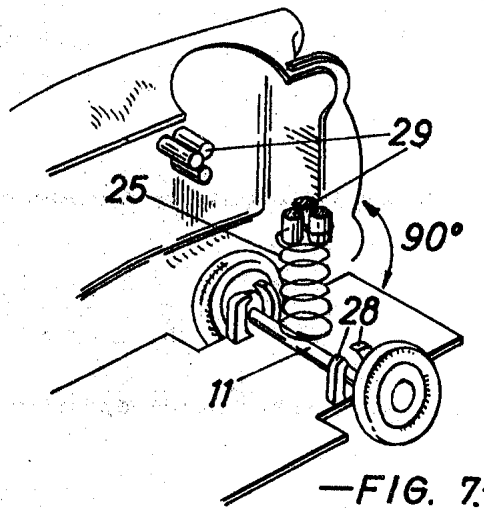


—FIG. 6.—



—FIG. 7.—

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