PATENT SPECIFICATION

DRAWINGS ATTACHED

891,681

Date of Application and filing Complete Specification: April 8, 1960.
No. 12500/60.
Application made in France on Feb. 1, 1960.
Complete Specification Published: March 14, 1962.

Index at acceptance:—Class 132(3), S19(A1C: D6: D7).

International Classification:—A63h.

COMPLETE SPECIFICATION

Improvements in or relating to Toy Motor Vehicles

We, MECCANO LIMITED, of 236, Binns Road, Liverpool, 13, a British company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to toy motor vehicles and in particular to arrangements in such vehicles for permitting pivotting of an axle to provide a steering effect.

It is an object of the invention to provide axle support arrangements which will permit pivotting of an axle to provide a steering effect in response to a light downward pressure on the body of the vehicle at that side of the vehicle to which it is desired it should turn, the axle being restored to normal position for straight line movement of the vehicle upon release of the downward pressure.

According to the invention there is provided a toy motor vehicle in which the axle for at least the front wheels passes through slots in upstanding lugs on opposite sides of the vehicle floor plate, which slots have rearward upwardly inclined extensions, and a spring acts on the axle urging it to assume a nomal position for straight line movement of the vehicle at the bottom of the inclined extensions of the slots.

The various features of the invention will be apparent from the following description of some exemplary embodiments thereof illustrated in the accompanying drawings, in which:—

Fig. 1 is a side elevation of part of the floor of a toy vehicle embodying the invention;

Fig. 2 is a perspective view of the whole of the floor shown in part in Fig. 1;

Fig. 3 is an inverted perspective view of a detail of Figs. 1 and 2 on an enlarged scale;

Fig. 4 is a view similar to Fig. 3 showing a modification of the axle retaining spring;

Fig. 5 is a perspective view of a diecast floor of a vehicle embodying the invention;

Fig. 6 is a perspective view of a vehicle floor embodying a modification of the invention.

Referring to Figs. 1 to 3, the vehicle floor comprises a sheet metal plate 1 bent to form upstanding lugs 2 and 3 which are slotted for the reception of the front and rear axles 4 and 5 respectively. The slots in the lugs 2 are each adapted to have a central depression in which the axle 4 is normally held in position for straight line movement of the vehicle by a blade spring 6 rivetted or otherwise secured to the floor 1 at 7. The rear end of spring 6 overlies the rear axle 5 to provide a rear wheel springing of the vehicle. At its front end, spring 6, as shown in Fig. 3, has a hole to clear a spigot 8, by which the vehicle body (not shown) is mounted on the floor plate 1, and has two spaced lugs 9 which, as shown in Fig. 2, extend downwardly on either side of the centre of the axle 4.

The slots in lugs 2 extend forwardly from the central depressions in a horizontal direction and extend rearwardly at an angle to the horizontal in an upward direction.

In response to a light downward pressure on one or other wing of the vehicle, as indicated by the arrow in Fig. 1, the floor is depressed until the axle 4 first assumes the dotted line position shown in the figure and then the end at which the pressure is applied moves rearwardly up the inclined portion of the slot. Correspondingly the other end of the axle moves forwardly along the horizontal portion of the slot in the lug on the other side of floor 1, the axle pivoting about the lugs 9 in spring 6. If now the vehicle moves forwards or backwards whilst the light pressure is maintained the pivoted state of the axle will cause the vehicle to follow an arcuate path. As soon as the downward pressure is removed the spring 6 urges the rearwardly displaced end of the axle 4 down the inclined portion of the slot into the central position and the vehicle then moves in a straight line.

The axle retaining spring 6 shown in Figs.

1 to 3 may be slotted longitudinally from each end as shown in Fig. 4 to provide individual spring limbs for the opposite ends of each of the axles 4 and 5. Part of the forward end slot of spring 6 may be provided by the operation of cutting and bending up the lugs 9 shown in Fig. 3 or these lugs 9 may be replaced by lugs 10 bent up from the floor 1, as shown in Fig. 4, and fitting within the forward end slot in spring 6.

Instead of pivoting the axle 4 between the lugs 9 of Figs. 1 to 3 or the lugs 10 of Fig. 4 this axle can be pivoted between upstanding spigots 11 on a die cast floor member 1^1 as shown in Fig. 5.

A further modification is shown in Fig. 6 wherein the forwardly extending horizontal portions of the slots in lugs 2 are omitted and the axle 4 instead of fitting between lugs 9 or 10 or spigots 11 as shown in the earlier figures rests against a rearwardly inclined single lug 12. The uppermost ends of the slots in lugs 2 are formed with recesses tending to retain the axle ends in the upper positions when displaced by downward pressure on the vehicle body. In this case only one end of the axle moves, the pivoting being about the slot in lug 2 at the other end of the axle in each case.

The lug 12 can be replaced by a similarly shaped spigot in the case of a die cast floor member 1 and in either case the lug 12 or spigot fits within the slot in spring 6.

A further modification of all the embodiments described is to employ a spigot or spigots depending from the body of the vehicle to co-operate with the axle 4 in place of the lugs 9, 10 or 12 or the spigots 11.

WHAT WE CLAIM IS:—

1. A toy motor vehicle in which the axle for at least the front wheels passes through slots in upstanding lugs on opposite sides of the vehicle floor plate, which slots have rearward upwardly inclined extensions, and a spring acts on the axle urging it to assume a normal position for straight line movement of the vehicle at the bottom of the inclined extensions of the slots.

2. A vehicle as claimed in claim 1 in which the slots each have a horizontal extension running forwardly of said normal position which latter position is defined by a depression between the forward and rearward extensions.

3. A vehicle as claimed in claim 1 or 2 in which the spring is a blade spring secured to the floor plate at a point between its ends which ends respectively overlie the front and rear axles.

4. A vehicle as claimed in claim 1 or claims 1 and 3 in which an upwardly inclined guide surface is provided for the centre of the front axle.

5. A vehicle as claimed in claim 1, 2 or 3, in which a pivot means for the centre of the front axle is provided.

6. A vehicle as claimed in claim 5 in which the pivot means is constituted by a pair of spaced downwardly extending lugs pressed out of the material of the spring and lying respectively in front of and behind the front axle.

7. A vehicle as claimed in claim 5 in which the pivot means is constituted by a pair of spaced upwardly extending lugs pressed out of the material of the floor plate and lying respectively in front of and behind the front axle.

8. A vehicle as claimed in claim 5 in which the pivot means is constituted by a pair of spaced upwardly extending spigots formed on the face of a die cast floor plate and lying respectively in front of and behind the front axle.

9. A vehicle as claimed in claim 4 in which the guide surface is constituted by a lug pressed upwardly out of the material of the base plate and located behind the centre of the front axle.

10. A vehicle as claimed in claim 4 in which the guide surface is provided by a spigot depending from the body of the vehicle.

11. A vehicle as claimed in any one of claims 4 to 10 in which the spring is a blade spring bifurcated over at least its forward end the limbs of the bifurcation lying one on each side of the pivot means or guide surface.

12. A toy motor vehicle substantially as herein described with reference to Figs. 1 to 3, Fig. 4, Fig. 5 or Fig. 6 of the accompanying drawings.

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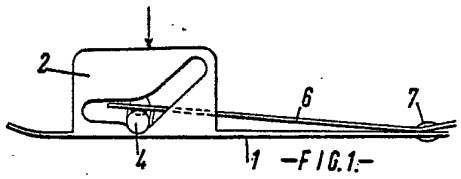
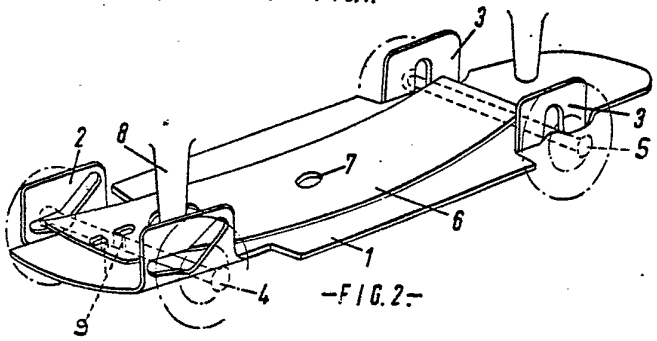
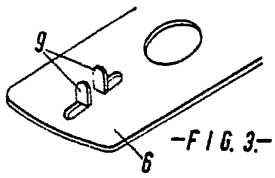
Leamington Spa: Printed for Her Majesty's Stationery Office, by the Courier Press.—1962.
Published by The Patent Office, 25, Southampton Buildings, London, W.C.2, from which copies may be obtained.



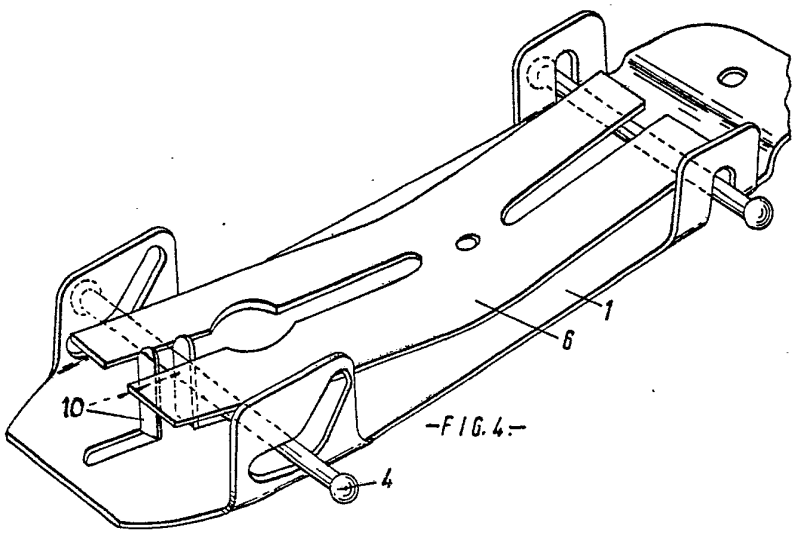
-FIG.1.-



-FIG.2.-



-FIG.3.-



-FIG.4.-

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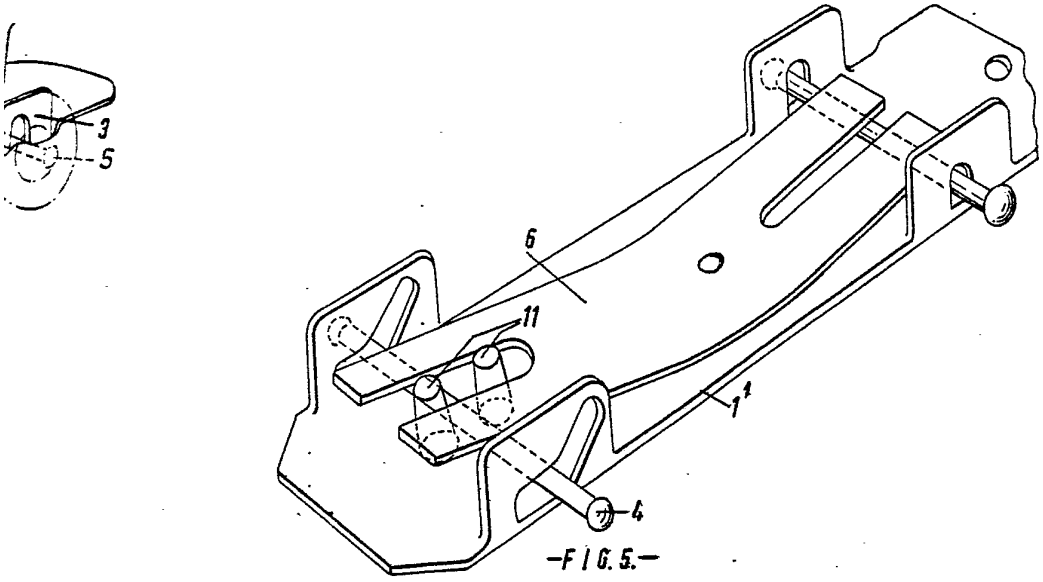
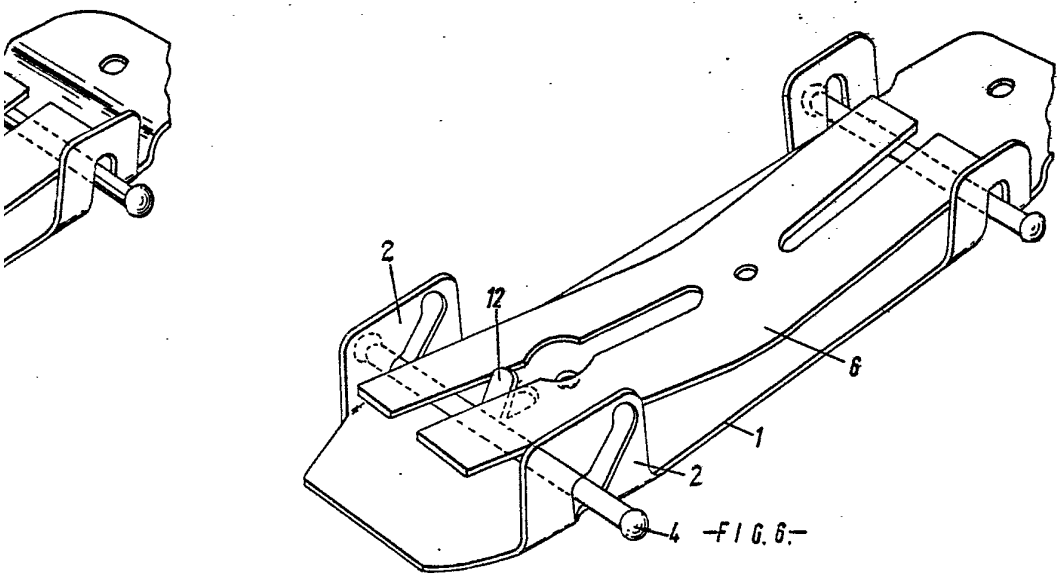
Sheets 1 & 2



-FIG. 5.-



-FIG. 6.-

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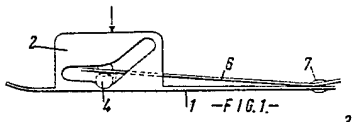
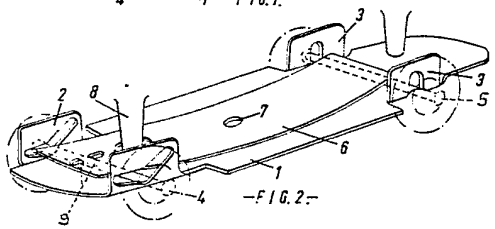
Sheets 1 & 2



-FIG.1.-



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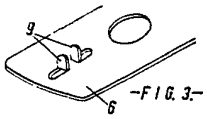
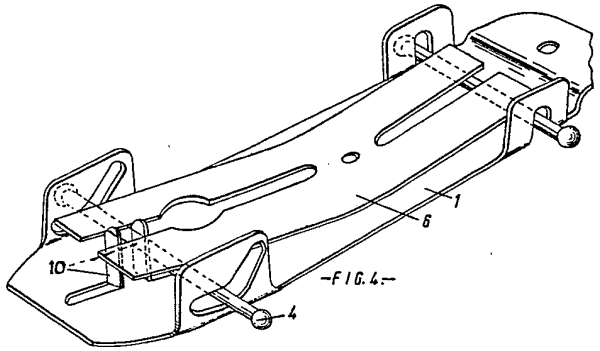
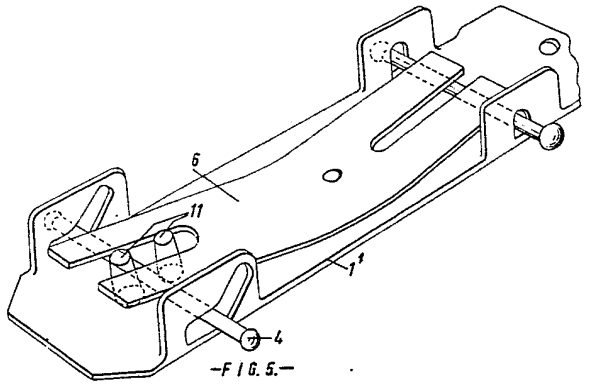


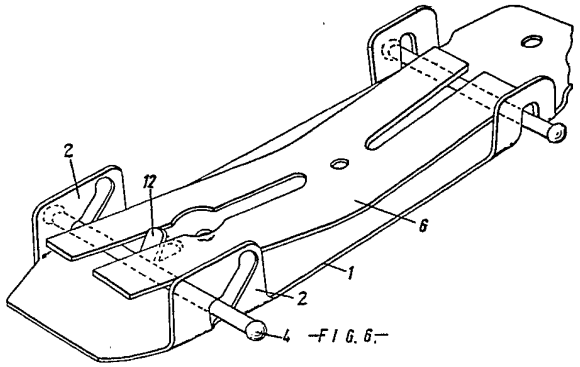
-FIG.3.-



-FIG.4.-



-FIG.5.-



-FIG.6.-