

PATENT SPECIFICATION

DRAWINGS ATTACHED

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Date of Application and filing Complete Specification March 8, 1963.

No. 9433/63.

Complete Specification Published June 8, 1966.

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Index at acceptance: —E2 F(1F, 1G, 3R)

Int. Cl.: —E 05 d 1/00

COMPLETE SPECIFICATION

Doors for Toy Motor Vehicles

We, MECCANO LIMITED, of 236 Binns Road, Liverpool 13, Lancashire; 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:—

The present invention concerns doors for toy vehicles, more especially the hinging means therefor.

Known doors for toy motor vehicles have no firm opening and closing action and are not provided with door stops, particularly to restrict the inward movement of the door and, therefore, the authentic appearance of the toy vehicle is impaired.

An object of the present invention is to overcome these disadvantages and to provide doors for toy vehicles, which have a firm action and are strong in construction as well as being authentic in appearance.

According to the present invention a door hinge arrangement for toy motor vehicles comprises a hinge member secured to the inner surface of the door member and means for urging the hinge member into engagement with a bearing edge formed in the opening in the body of the vehicle for receiving the door member, the hinge member being so shaped that when the door member is moved to the open position it also undergoes a movement away from said bearing edge whereas when the door member is moved to the closed position it undergoes a movement towards said bearing edge.

The invention will be described further, by way of example, with reference to the accompanying drawings, in which:—

Fig. 1 is a diagrammatic plan of a door hinge assembly for a toy motor vehicle, constructed in accordance with the invention and shown in the closed position;

Fig. 2 is a view similar to Fig. 1 showing the door in the open position;

Fig. 3 is a perspective view of a detail of the hinge assembly; and

Fig. 4 is a view from below of a detail of the hinge assembly.

A door 1 for a toy motor vehicle is provided with a hinge member 2 extending from its inner surface 1a, which hinge member 2 is urged against an edge 3a on the vehicle body member 3 by means of a resilient member, preferably consisting of a flat spring 4, secured to the vehicle body member 3. The spring 4 may be secured to the body member 3 by means of a downwardly depending rib 5 on each side of the flat spring 4.

The hinge member 2 projects beyond the adjacent edge 1b of the door member 1, the outer edge 2a of the hinge member 2 extending substantially in the plane of the inner surface 1a of the door member 1 and being provided with a vertical groove 2b disposed remote from the adjacent edge 1b of the door member 1.

The angle between the hinge member 2 and the adjacent edge 1b of the door member 1 forms a further locating groove 6 which locates about the edge 3a of the vehicle body member 3 when the door 1 is in the closed position. The surface between the two grooves is preferably convex. The vertical groove 2b locates about the edge 3a when the door 1 is open to its fullest extent and acts as a stop to limit the outward movement of the door 1 in conjunction with a downwardly extending portion 2c of the hinge member 2 which engages with a lower horizontal edge of the body member 3.

The surfaces 2d and 2e respectively of the hinge member 2 form an oblique angle relative to each other, so that when the door 1 is in the closed position the spring 4 engages

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with the surface $2e$ of the hinge member 2 and when the door 1 is in the open position, the spring 4 engages with the surface $2d$ of the hinge member 2.

5 The surface $2f$ (Fig. 4) of the downwardly depending portion $2c$ (Figs. 3 and 4) engages with the body member 3 when the door 1 is in the open position and the angle formed between the surface $2f$ and the body member 10 3 when the door 1 is in the closed position, is substantially the same as the angle formed between the body member 3 and the door 1 when in the open position (shown in broken lines) i.e. angle A substantially equals angle B.

15 When the door 1 is moved from the closed position to the open position, by means of manual pressure applied to the inner surface $1a$ of the door, the edge $3a$ is urged from the groove 6 to the highest point of the convex surface 7 of the hinge member 2 as the door 1 opens. When the edge $3a$ has reached this position, the spring 4 urges the edge $3a$ along the remaining portion of the convex surface 7 and into the groove $2b$, thereby resulting in a tight rearward movement of the door member 1. This rearward movement of the door 1 occurs as the spring 4 urges the convex surface 7 into the groove $2b$. At the same time the spring 4 slides from the surface $2e$ to the surface $2d$ of the hinge member 2 respectively.

20 When the door is to be closed, pressure is manually applied to the outer surface of the door member 1 until the edge $3a$ has been urged from the groove $2b$ and reached the highest point of the convex surface 7. The spring then urges the edge $3a$ along the remaining portion of the convex surface 7 and into the groove 6, a forward movement of the door 1 and the hinge member 2 taking place as the edge $3a$ slides into the groove 6. Simultaneously the spring 4 slides from the surface $2d$ of the hinge member 2 to the surface $2e$ respectively.

45 When the door is in the open position, the rearward movement results in a gap 8 between the door member 1 and the vehicle body 3.

50 The lowermost portion of the body member 3 extending below the door 1 may preferably be provided on its inner surface with an upwardly extending portion 9 which acts as a door stop to limit the inward movement of the door 1.

55 WHAT WE CLAIM IS:—

60 1. A door hinge arrangement for top motor vehicles comprising a hinge member secured to the inner surface of the door member and means for urging the hinge member into engagement with a bearing edge formed in the opening in the body of the vehicle for receiving

the door member, the hinge member being so shaped that when the door member is moved to the open position it also undergoes a movement away from said bearing edge whereas when the door member is moved to the closed position it undergoes a movement towards said bearing edge.

2. A door hinge arrangement as claimed in claim 1, wherein the hinge member extends beyond the hinging edge of the door member, the extended portion of the hinge member having a nose which terminates substantially in the plane of the inner surface of the door member.

3. A door hinge arrangement as claimed in claim 2, wherein the extended portion of the hinge member includes a curved surface which in conjunction with the edge of the door member from which it extends forms a first vertical groove and which in conjunction with said nose forms a second vertical groove, whereby when the door member is in the closed position the bearing edge locates within the first vertical groove and when the door member is in the open position the bearing edge locates within the second vertical groove.

4. A door hinge arrangement as claimed in any of claims 1 to 3, wherein the hinge member is urged against the bearing edge by means of a resilient member consisting of a flat spring which extends transversely across the vehicle body member and is secured to said body member, the two ends of the spring engaging with the hinge members of the door members on opposite sides of the vehicle.

5. A door hinge arrangement as claimed in claim 4, wherein during the opening and closing movement of the door member, the spring is in sliding engagement successively with two flat portions of the hinge member, said flat portions being arranged at an obtuse angle with one another.

6. A door hinge arrangement as claimed in claim 4, wherein two ribs integral with the body member are disposed one on each side of the spring to secure the spring to the body member.

7. A door hinge arrangement as claimed in any of the preceding claims, wherein the hinge member has an extension which in the open position of the door member engages with an edge in the opening in the body member for receiving the door member, thereby providing a stop for the door member.

8. A door hinge arrangement as claimed in any of the preceding claims, wherein the lower horizontal edge of the opening in the body member for receiving the door member is provided with an upstanding ridge to form a stop to limit the closing movement of the door member.

9. A door hinge arrangement substantially as described with reference to the accompanying drawings.

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Leamington Spa: Printed for Her Majesty's Stationery Office by the Courier Press.—1966.
Published at The Patent Office, 25, Southampton Buildings, London, W.C.2, from which copies may be obtained.

