March 25, 1941. W. KELLERMANN 2,236,143

TOY VEHICLE

Filed Feb. 20, 1939

Fig. 1

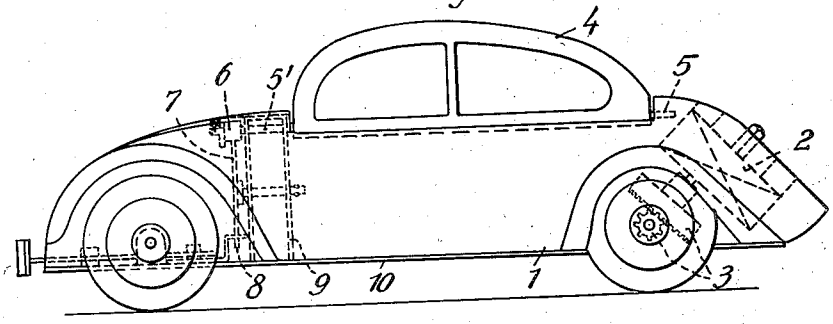


Fig. 2

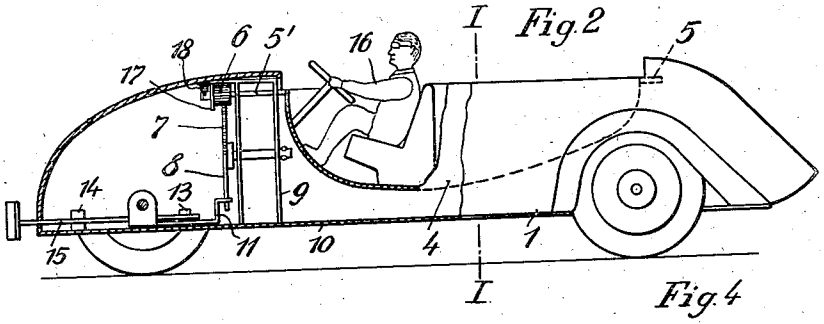


Fig. 3

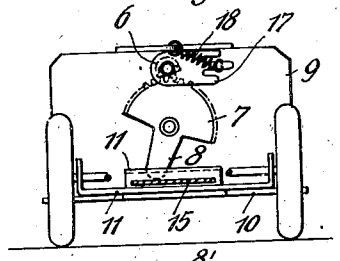
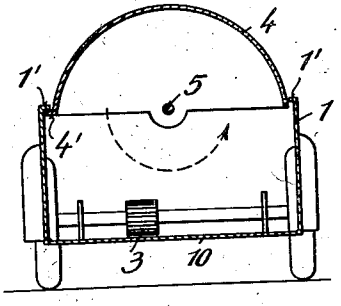


Fig. 4



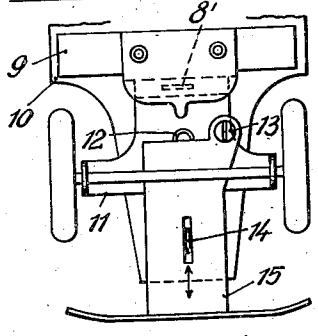


Fig. 5

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TOY VEHICLE

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13 Claims. (Cl. 46—222)

This invention relates to toy vehicles in the form of an automobile having a hood which may be turned into the body of the toy.

Toy vehicles in the form of an automobile having a hood which may be turned into the body of the toy to change the appearance of the latter, are known. In the known toy vehicles of this kind, however, it is necessary to first impart some turning or swinging motion to other parts of the toy vehicle in order to clear the space required for reception of the hood upon being swung into the body of toy. In such case, however, the part to which the turning motion is imparted is concealed from view and does not serve any other purpose.

In contra-distinction to such known toy vehicles my invention is essentially directed to a special construction of the toy vehicle in such a manner that said hood, which is constructed in the form of a hollow shell, is mounted swingably about an axis which is positioned in the central longitudinal direction with respect to said hood or hollow shell, so that the latter, upon imparting a swinging motion thereto will assume a position within the casing of the toy vehicle in a manner to present its interior surface as a bordered depressed interior space of the toy vehicle.

By so constructing said hood I secure the advantage that the swingable hood of the toy vehicle may be turned into the toy casing without first clearing the space necessary for this purpose. Besides, according to my invention the hood upon being turned into the casing of the toy will not only be concealed from view but makes its appearance in the form of a confined hollow interior space of the toy vehicle.

The swingably mounted hood having the form of a hollow shell thus does not only normally form the roof or top of the toy vehicle but also functions after having been turned into the body of the top vehicle to represent a lining or cover for the open casing, and furthermore to form a cavity in the body of the toy vehicle, said cavity serving as a seat for the figure of a driver.

In order to perform the swinging motion of the hood, the latter may be provided with any desired actuating means, such as a gear-wheel drive, a driving axle or the like. It is further possible to provide one or more figures representing the driver or other persons travelling in the vehicle, these figures participating in the swinging motion imparted to said hood.

In the accompanying drawing which forms part of this specification I have represented an example of a construction of my novel toy vehicle. In the drawing, Fig. 1 is a side view of the toy vehicle, Fig. 2 another side view, partly broken away, showing the toy vehicle with the hood turned inward, so that the toy vehicle has the appearance of an open automobile such as a touring car, Fig. 3 a front view partly in section of the toy vehicle with the front cover removed, Fig. 4 a section on line I—I of Fig. 2 and Fig. 5 a top view taken of the front part of the toy vehicle showing in particular the actuating means for imparting the swinging motion to the hood of the vehicle.

Referring more particularly to the drawing, the toy vehicle consists of a base plate 10 and the hollow body of the vehicle representing the car body. A spring-driven clockwork 2 may be provided in the rear part of the car body, said clockwork serving as a mechanical drive for the rear axle of the vehicle by means of a toothed gearing 3 consisting of a crown-wheel and a pinion. The car body 1 of the toy vehicle is provided with a convertible roof, top or hood 4 in the form of a hollow shell-like member provided with journals or pivots 5, 5' positioned in the direction of the longitudinal central axis of said hood 4. The rear journal 5 rotates in the wall of the body of the toy, while the front pivot 5' is supported in a bearing provided in a U-shaped transverse plate 9 of the car body. In front of said bearing in the plate 9 said journal or pivot 5 carries a pinion 6 which is in mesh with a segmental gear-wheel 7 provided with an arm 8 co-operating with an actuating mechanism. This mechanism consists of a bogie 11 for the front wheel axle, said bogie being mounted on the base plate 10. The bogie 11 is further provided at one of its sides with an upwardly directed nose 13 and at its rear end with a guide slot 8', both as shown in Fig. 5. Said guide slot is in engagement with said arm 8 on said segmental gear wheel 7. Above the bogie 11 there is mounted a longitudinally displaceable slide 15 provided with a lateral eye engaging from above the nose 13 on the bogie 11. A tongue 14 bent out of the base plate 10 serves as a guide for the slide 15, said tongue passing through a longitudinal slot in said slide.

Connected to the pinion 6 on the journal 5' is a crank 17 which is maintained under the action of a spring 18 tending to swing said crank into its right-hand or left-hand end position to act as a stop for the respective right-hand or left-hand swinging motion imparted to the hood 4. In the left-hand and right-hand end positions of the crank 17 the swingably mounted hood 4 may be kept either in its raised and visible position on the casing of the vehicle as shown in Fig. 1,

to represent a closed automobile, or in its lowered or turned-in concealed position as shown in Fig. 2 to represent an open automobile.

Within the hood or hollow shell 4 there may be placed at least one figure 16 representing the driver of the vehicle, this figure always participating in the swinging motion imparted to the hood 4. If the hood 4 is turned upward into the position shown in Fig. 1, the figure of the driver will be positioned upside down within the hollow space of said hood and will not be visible as the windows are only outlined and are composed of the sheet metal of the hood. The windows on the lateral walls of the hood are only simulated to conceal the interior of the hood from view.

Swinging motion may be imparted to the hood 4 either by hand by way of the pinion 6 and segmental gear-wheel 7 or by means of a spindle connected to the pivots 5, 5'. It will also be immediately possible to provide an arrangement whereby the swinging motion may periodically be imparted at intervals to the hood 4 in an automatic way from the clockwork 2, for instance by the intermediary of a cam-disk actuated by the latter. Swinging of the hood 4 by hand is assumed to be accomplished in the construction as shown by way of the pinion 6 and segmental gear-wheel 7 in such a manner that the slide 15 which is connected with a thrust-rod is moved in longitudinal direction. The slide 15 now cooperates with the nose 13 on the bogie 11 to effect rotation of the latter about its axis of rotation 12, therewith simultaneously adjusting the front wheels of the vehicle, while the rear slot 8' will move the arm 8 on the segmental gear-wheel 7, so that the latter rotates the pinion 6 to effect the swinging motion of the hood 4 about the pivots 5, 5' through an angle of 180°.

The end positions of the swinging motion of the hood 4 are in every case defined by the respective end positions of the crank 17 which is under action of the spring 18. Besides the crank 17 or instead thereof there may be provided a rim 4' projecting from one lateral edge of the hood 4, said rim 4' abutting against the inwardly bent left-hand or right-hand rim 1' of the body 1 of the toy vehicle, when the hood is in its raised or depressed position, respectively.

My invention is not confined to toy vehicles of the form of passenger automobiles but may likewise be used in connection with toy vehicles of the form of freight automobiles. It is further possible, without departing from my invention, to construct the toy vehicle without clockwork, for instance in the form of a toy railway car or the like.

I claim:

1. A toy vehicle comprising a vehicle casing, a hood having the form of a hollow shell mounted swingably about an axis within its central longitudinal plane to permit swinging motion of said hood from normal position above the vehicle casing into a position within the latter, said hood in said latter position representing a bordered depressed interior space of said casing, and actuating means associated with said hood, said actuating means adapted to impart swinging motion to said hood into the one or other of said positions.

2. A toy vehicle comprising a vehicle casing, a hood having the form of a hollow shell mounted swingably about an axis within its central longitudinal plane to permit swinging motion of said hood from normal position above the vehicle casing into a position within the latter, said hood in said latter position representing a bordered depressed interior space of said casing, and actuating means associated with said hood, said actuating means consisting of a toothed wheel drive adapted to impart swinging motion to said hood into the one or other of said positions.

3. A toy vehicle comprising a vehicle casing, a hood having the form of a hollow shell mounted swingably about an axis within its central longitudinal plane to permit swinging motion of said hood from normal position above the vehicle casing into a position within the latter, said hood in said latter position representing a bordered depressed interior space of said casing, and actuating means associated with said hood, said actuating means consisting of a spindle adapted to impart swinging motion to said hood into the one or other of said positions.

4. A toy vehicle comprising a vehicle casing, a hood having the form of a hollow shell mounted swingably about an axis within its central longitudinal plane to permit swinging motion of said hood from normal position above the vehicle casing into a position within the latter, said hood in said latter position representing a bordered depressed interior space of said casing, a toothed wheel drive associated with an axle for said top, and a bogie carrying the front wheels of said vehicle, said toothed wheel drive being operatively connected with said bogie to impart swinging motion to said hood upon rotation of said bogie.

5. A toy vehicle comprising a vehicle casing, a hood having the form of a hollow shell mounted swingably about an axis within its central longitudinal plane to permit swinging motion of said hood from normal position above the vehicle casing into a position within the latter, said hood in said latter position representing a bordered depressed interior space of said casing, an actuating mechanism for imparting swinging motion to said hood, said mechanism including a crank mounted on an axle of said hood, stops limiting the swinging motion of said crank and therewith of said hood, and a spring tending to rotate said crank into its one and the other end position defined by said stops to limit the respective swinging motion of said hood.

6. A toy vehicle comprising a vehicle casing, a hood having the form of a hollow shell mounted swingably about an axis within its central longitudinal plane to permit swinging motion of said hood from normal position above the vehicle casing into a position within the latter, said hood in said latter position representing a bordered depressed interior space of said casing, an axle for said hood, a bogie for the front wheels of the vehicle, and a toothed wheel drive interposed between said axle and said bogie adapted to transmit the rotation of said bogie to said axle, therewith to impart swinging motion to said hood.

7. A toy automobile comprising a vehicle body, a hollow shell-like top rotatably mounted in the vehicle body on a longitudinal axis of the body, and means for turning said top relative to the body whereby in one position the top appears as a roof of the automobile and in another position the body forms the inner space of the vehicle body.

8. A toy automobile according to claim 7, in which means are secured to the underside of the shell-like top in the hollow space thereof to simulate a passenger and a seat which are rotated with the top so that said means are visible when the top is turned into the body to display the inner side of the hollow top as a limited and depressed vehicle interior.

9. A toy automobile according to claim 7, in which the means includes a gear and a gear segment in mesh therewith, and a setting means for the segment.

10. A toy automobile comprising a vehicle body, a hollow shell-like member rotatably mounted in the vehicle body, the outer surface of the member forming the roof of the automobile and the inner surface the interior of the automobile, and means for rotating the shell-like member to expose either the roof surface or the interior surface to convert the toy into a closed or open automobile.

11. A toy automobile according to claim 10, in which the means includes a snap over device to rotate the member instantaneously from one position to the other.

12. A toy automobile comprising a vehicle body, a member mounted in the vehicle body one side of said member forming a roof for the automobile and the other side of said member forming the interior of the automobile, and means for instantaneously converting the toy into a closed automobile by exposing the roof or an open automobile by exposing the interior.

13. A toy vehicle comprising a body member, means movably mounted in the body member forming a top for the vehicle in one position and the interior in the other position, and means for rapidly adjusting said first-named means to convert the toy vehicle into a closed vehicle from the open position or an open vehicle from the closed position.

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