Nov. 26, 1940. H. MÜLLER 2,223,119

TOY AUTOMOBILE

Filed March 13, 1939 2 Sheets-Sheet 1

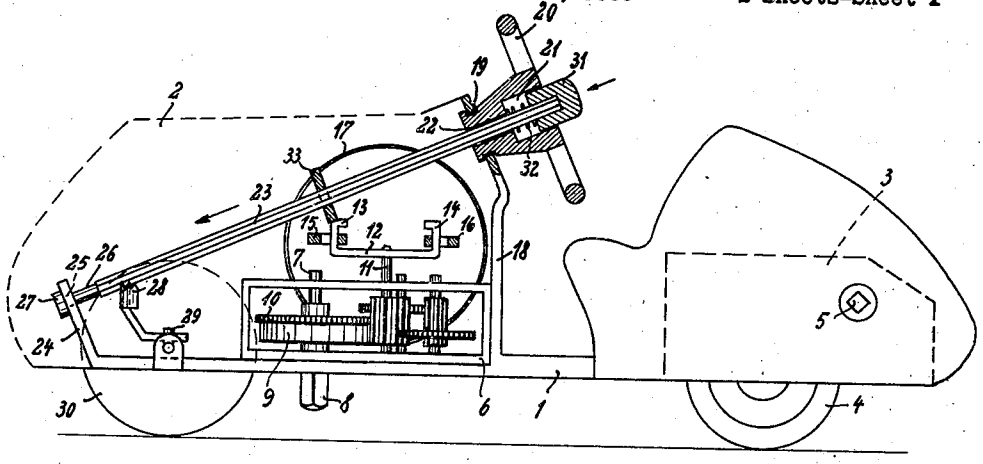

Fig. 1

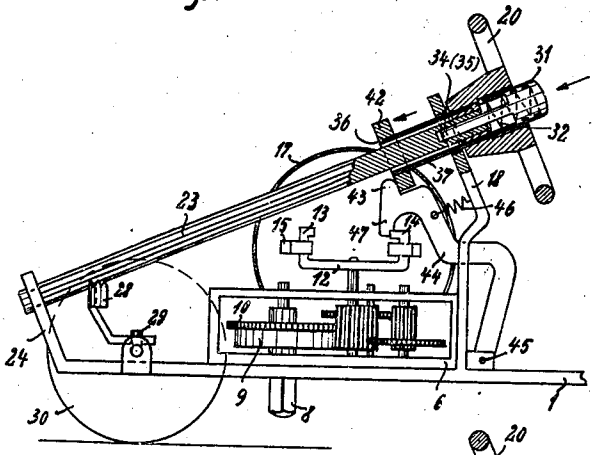

Fig. 2

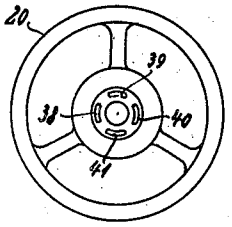

Fig. 3

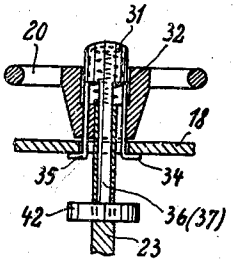

Fig. 4

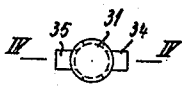

Fig. 5

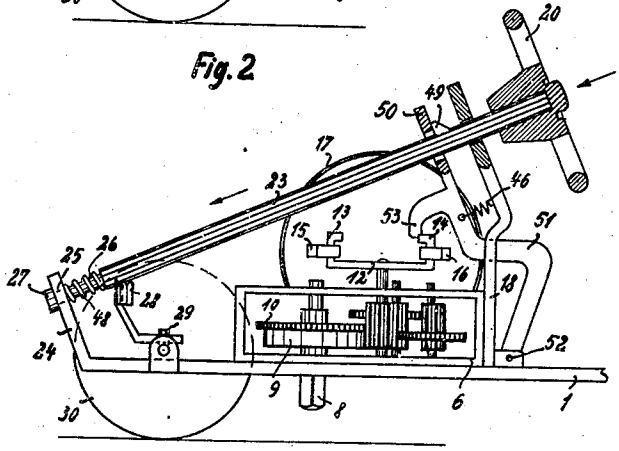

Fig. 6

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2 Sheets-Sheet 2

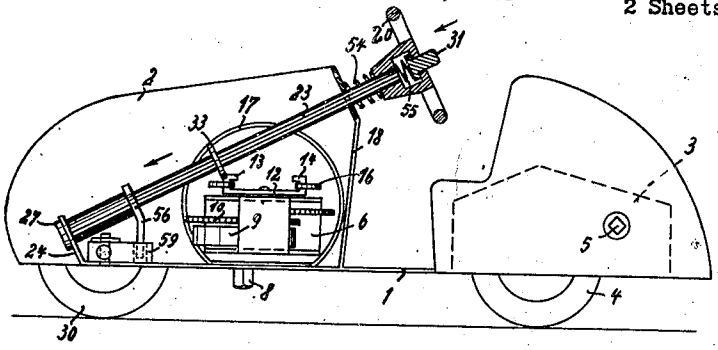

Fig. 7

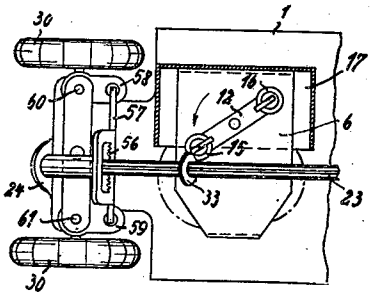

Fig. 8

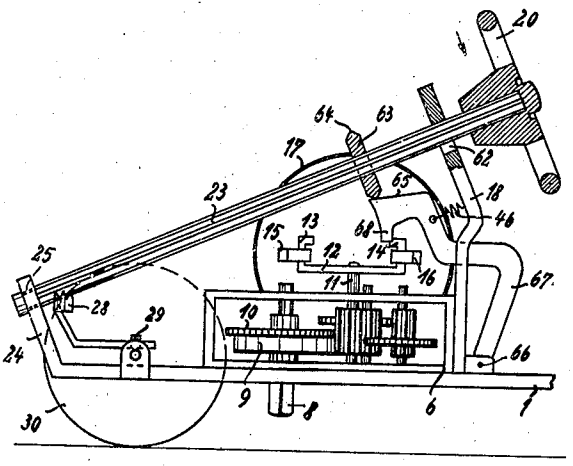

Fig. 9

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UNITED STATES PATENT OFFICE

2,223,119

TOY AUTOMOBILE

Heinrich Müller, Nuremberg, Germany

Application March 13, 1939, Serial No. 261,615
In Germany October 20, 1938

7 Claims. (Cl. 46—111)

The present invention relates to improvements in toy motor vehicles, and consists of an arrangement for giving audible warning signals to imitate those of real automobiles.

Toy motor vehicles provided with mechanical or electrical means for giving acoustic signals whilst travelling are already known. In these known arrangements, however, the clockwork mechanism for driving the toy is also used for giving the signals.

According to the present invention the acoustic signals are given by the operator's hand in imitation of the industrial prototypes by means of a separately arranged clockwork mechanism, both during the movement of the toy motor car and when it is stationary, at any desired intervals and for any desired periods, by moving a portion of the toy. The signal release mechanism, together with the separate clockwork mechanism controlled by it, which operates the acoustic signalling arrangement, is mounted in or upon the toy.

In the embodiments illustrated the toy motor vehicle has the shape of an open automobile, and, as in actual practice, the release arrangement is fitted in or on the steering wheel. Whether the steering wheel itself is arranged to turn or is only an imitation is immaterial as far as the invention is concerned. If the acoustic signalling device is arranged as a push-button on a turning steering wheel as is usually the case in actual practice, then the attraction and possibilities of the toy are considerably enhanced.

The signal release mechanism is such that it allows the separate signal clockwork to run as long as the release device is actuated by the hand.

A rotating member is provided on the signal clockwork, which is rotated when the mechanism is running down and strikes against a hollow metal body or against the car body. This produces a noise resembling the acoustic signals of a real automobile. The provision of a separate clockwork mechanism for giving the audible signals enables it to be used even for toys without driving mechanism, but the invention is primarily intended to be applied to mechanically propelled toys.

The invention is illustrated in the accompanying drawings by way of example, but it is understood that the invention is not restricted to the embodiments herein shown. In the drawings,

Figure 1 shows in side elevation, partly in section, a toy motor vehicle in which a separate signalling clockwork mechanism is shown, wherein the signal is produced by pressing a button fitted to the steering wheel;

Figure 2 shows in side elevation, partly in section, an arrangement similar to Fig. 1, in which the signal release is also effected by pressing a button on the steering wheel;

Figure 3 is a plan of the steering wheel, looking in the direction of the arrow in Fig. 2;

Figure 4 is an axial section of the upper part of the steering column of Fig. 2;

Figure 5 is a plan of the push-button of Fig. 4, looking in the direction of the arrow in Fig. 2;

Figure 6 shows in side elevation partly in section an embodiment in which the whole of the steering column is displaced axially for the purpose of releasing the signal mechanism;

Figure 7 shows in side elevation partly in section, an embodiment in which the whole of the steering column is axially displaced to produce the signal, the signal clockwork mechanism being partly built into the signal gong, and a dummy press-button being provided;

Figure 8 is a part plan of Fig. 7, with a gong in section;

Figure 9 shows in elevation, partly in section, an embodiment in which the signal is reproduced by rocking the steering column about its bottom bearing.

The toy motor car illustrated in Fig. 1 is provided with a base 1, on which a body 2, containing a known type of clockwork mechanism 3 for driving the rear wheels 4, is mounted. The propelling clockwork is wound up by means of a square spindle 5. In the front part of the body 2 is secured to the base 1 a frame 6, which contains the acoustic signal operating parts. In this frame is journalled a shaft 7, one end of which is provided with a squared spindle 8, for winding up a spring 9, mounted on the said shaft. The shaft 7 also carries a toothed wheel 10, by which a shaft 11 is rotated by means of a known type of drive. The said shaft 11 projects above the top portion of the frame 6 and carries a cross member 12, to the ends 13 and 14 whereof centrifugal weights 15 and 16 are attached.

To the frame 1 is also secured a gong 17, against the rear of which the weights 15 and 16 strike when the shaft 11 rotates, thus producing a noise resembling that of a real automobile. A partition 18 forming a dash-board is also secured to the frame 1. In this dash-board the steering wheel 20, which has a recess 21 and a bore 22, is rotatably mounted. The steering column 23, engages in the bore 22, and the lower end of the said column is mounted at 25 in an

upwardly turned projection 24 of the frame 1. The column 23 is recessed to a smaller diameter near its lower end at 26, and is provided with a fixing collar 27. It is preferably formed as a toothed pinion throughout its length, as shown. The steering column 23 meshes with a rack 28, which actuates the stub axles 29 and the front wheels 30. When the steering wheel is turned the front wheels 30 are also turned, thus enabling the toy to run in circles.

A push-button 31, which slides in the recess 21 of the steering wheel, is also attached to the steering column 23. The push-button 31 is controlled by a spring 32, which abuts against the bottom of the recess 21 and against the push-button. The said spring forces the steering column upwards until it abuts against the collar 27 on the shoulder 24.

The steering column 23 is also provided with a disc or washer 33 rigidly fixed thereto, the diameter of which is such that it acts as a stop for the ends 13 and 14 of the cross member 12, thus preventing the said cross member from rotating when the spring 9 is wound up. If the push-button 31 is depressed, then the steering column 23 and the washer 33 affixed thereto move with it against the pressure of the spring 32, so that the ends 13 and 14 of the cross member 12 are released, and the latter is then rotated by the spring 9. Owing to centrifugal force, the weights 15 and 16 strike against the base of the gong 17 and produce a harsh noise. When the pressure on the button 31 is released, the steering column is pulled back by the spring 32, so that the washer 33 stops the movement of the ends 13 and 14 of the cross member, and consequently stops the production of sound.

The arrangement illustrated in Figs. 2, 3, 4 and 5 is similar to that of Fig. 1, except that the steering column 23 is not adapted to slide in the shoulder piece 24, though it is arranged rotatably therein. In this case the push-button 31 is provided with four lugs 34, 35, 36 and 37. The bottom of the steering wheel 20 is provided with slots 38, 39, 40 and 41, corresponding to the lugs 34 to 37 and through these slots the said lugs project. Inside the steering head a spring 32 is arranged between the steering head and push-button.

After the lugs 34 to 37 have been inserted through the slots the lugs 34 and 35 are bent back behind the wall 18, thus preventing the push-button 31 from being withdrawn. The ends of the lugs 36 and 37 are fixed to a disc 42, which is loosely mounted on the steering column. The disc 42 rests against a shoulder 43 on a lever 44, which is pivoted at 45 to the base 1 of the toy motor vehicle and is controlled by a pull spring 46. By means of the spring 46 the end 47 of the lever 44 is brought into the track of the ends 13 and 14 of the cross member 12, so that the said ends are stopped by the shoulder 47. When a signal is to be given by depressing the button 31, the disc 42 slides down the column against the action of the spring 32, and through the medium of the shoulder 43 the lever 44 is rocked on its pivot 45 against the pull of the spring 46, thus releasing the ends 13 and 14 of the cross member. When the pressure on the button 31 is removed the springs 32 and 46 bring back the disc 42, and the lever 44 is again moved into the track of the ends 13 and 14 by the spring 46, thus stopping the signal.

The embodiment illustrated in Fig. 6 shows a steering column 23 similar to that shown in Fig. 1. The column 23 is mounted in the bent-up portion 24 at 25 and is provided with a portion 26 of small diameter and with a collar 27. A spring 48 is arranged in the recessed portion 26. The steering wheel 20 is fixed to the column 23. An abutment 49 is also fitted to the column 23, and abuts against an extension 50 of a lever 51. This lever is pivotally mounted on the base 1, and is controlled by a spring 46. The said lever is provided with a shoulder 53, which is brought into the track of the ends 13 and 14 of the cross member for the purpose of stopping the movement as previously explained in regard to Fig. 2. When the spring-controlled push-button, which is preferably marked, is depressed by pressing the steering wheel 20, this pressure is transmitted by the shoulder 49 to the portion 50 of the lever, thus moving the shoulder 53 out of the track of the ends 13 and 14, so that the cross member 12 can rotate. During this movement the spring 46 is tensioned, and when the pressure on the steering wheel is released the steering column 23 is moved back by the spring 48, and the lever 51 is also pulled back into its original position by the spring 46, so that it again comes within the track of the cross member ends 13 and 14.

According to Figs. 7 and 8 the steering column 23 is arranged to slide longitudinally and is controlled by a spring 54, which abuts against the partition 18 and against the lower end of the steering wheel 20. The steering wheel is provided with a driving push-button 31, controlled by a spring 55, but the movement of this push-button is only imitative and has no connection with the reproduction of the signal itself. On the column 23 is mounted a disc 33, the purpose of which is to stop the rotation of the ends 13 and 14 of the cross member 12 in the same way as in Fig. 1. In this embodiment the frame 6 of the driving mechanism is partly fitted inside the gong 17, thus saving space. In this arrangement steering is effected by the splined shaft 23 and a rack 56, which is mounted on a coupling rod 57. The rod 57 engages in the steering swivels or stub axles 58 and 59 of the front wheels 30. The steering swivels 58 and 59 are rotatably mounted at 60 and 61.

In the embodiment illustrated by Fig. 9 the steering column 23 is mounted at 25 in the bent-up portion 24 with a certain amount of play, so that it can swing about this bearing in the plane of the drawings. The partition 18 is provided with a corresponding opening 62, which enables the control column to be rocked downwards. A disc 63 is fixed on the column 23. The edge 64 of this disc co-operates with the edge 65 of a lever 67 pivoted to the floor 1 of the car at 66. The lever 67 is controlled by a spring 46, which tends to push the steering column upwards. If the steering column 23 is pressed down in the direction of the arrow towards the base 1, then the edge 64 slides along the inclined edge 65 and brings the stop 68 out of the track of the ends 13 and 14 of the cross member, which can then be rotated by the spring 9. When the pressure on the steering wheel is released the spring 46 returns the steering column 23 to the position shown in Fig. 9.

What I claim is:

1. A toy motor vehicle, comprising a car body, a steering wheel journalled in the car body, a bar rotatably mounted at its mid point on the car body, clockwork mechanism for rotating the bar, means for stopping the rotation of the bar,

a push button mounted on the steering wheel for disengaging the said stopping means, a gong attached to the car body, and centrifugal weights connected to the ends of the rotatable bar and adapted to strike the gong when the bar rotates.

2. A toy motor vehicle, comprising a car body, a steering column longitudinally slidable in the car body, a steering wheel at the upper end of the steering column, a spring resisting downward longitudinal movement of the steering column, a bar rotatably mounted at its mid point on the car body, clockwork mechanism for rotating the bar, means for stopping the rotation of the bar, the said stopping means being disengaged by a downward longitudinal movement of the steering column, a gong attached to the car body, and centrifugal weights connected to the ends of the rotatable bar and adapted to strike the gong when the bar rotates.

3. A toy motor vehicle, comprising a car body, a steering wheel journalled in the car body, a bar rotatably mounted at its mid point on the car body, clockwork mechanism for rotating the bar, a stopping lever pivotally mounted on the car body and capable of being rocked into a position in which it intercepts the rotatable bar, a push button mounted on the steering wheel for disengaging the stopping lever from the rotatable bar, a gong attached to the car body, and centrifugal weights connected to the ends of the rotatable bar and adapted to strike the gong when the bar rotates.

4. A toy motor vehicle, comprising a car body, a steering wheel journalled in the car body, a bar rotatably mounted at its mid point on the car body, clockwork mechanism for rotating the bar, a stopping lever pivotally mounted on the car body and capable of being rocked into a position in which it intercepts the rotatable bar, a spring constantly tending to keep the stopping lever engaged with the rotatable bar, a push button mounted on the steering wheel for disengaging the stopping lever from the rotatable bar, a gong attached to the car body, and centrifugal weights connected to the ends of the rotatable bar and adapted to strike the gong when the bar rotates.

5. A toy motor vehicle, comprising a car body, a steering column longitudinally slidable in the car body, a bar rotatably mounted at its mid point on the car body, clockwork mechanism for rotating the bar, a stopping lever pivotally mounted on the car body and capable of being rocked into a position in which it intercepts the rotatable bar, the stopping lever being formed with an aperture through which the steering column passes, a shoulder on the steering column adapted to rock the stopping lever out of engagement with the rotatable bar when the steering column is depressed, a gong attached to the car body, and centrifugal weights connected to the ends of the rotatable bar and adapted to strike the gong when the bar rotates.

6. A toy motor vehicle, comprising a car body, a steering column longitudinally slidable in the car body, a steering wheel at the upper end of the steering column, a spring resisting downward longitudinal movement of the steering column, a bar rotatably mounted at its mid point on the car body, clockwork mechanism for rotating the bar, means for stopping the rotation of the bar, the said stopping means being disengaged by a downward longitudinal movement of the steering column, a gong attached to the car body, centrifugal weights connected to the ends of the rotatable bar and adapted to strike the gong when the bar rotates, and a spring-controlled dummy push button on the steering wheel.

7. A toy motor vehicle, comprising a car body, a bar rotatably mounted at its mid point on the car body, clockwork mechanism for rotating the bar, a steering column movably mounted in the car body, a steering wheel at the upper end of the steering column, a stopping lever pivotally mounted on the car body and capable of being rocked into a position in which it intercepts the rotatable bar, a spring constantly tending to keep the stopping lever engaged with the rotatable bar, means mounted on the steering column for disengaging the stopping lever from the rotatable bar when the steering column is moved, a gong attached to the car body, and centrifugal weights connected to the ends of the rotatable bar and adapted to strike the gong when the bar rotates.

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