Aug. 7, 1956 F. R. BROWN ET AL 2,757,482

SELECTIVELY SELF-WRECKING TOY VEHICLE

Filed Nov. 26, 1954

2 Sheets-Sheet 1

Fig. 1

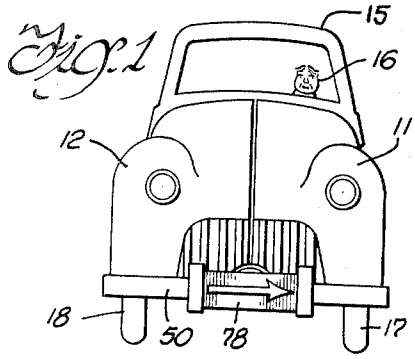


Fig. 2

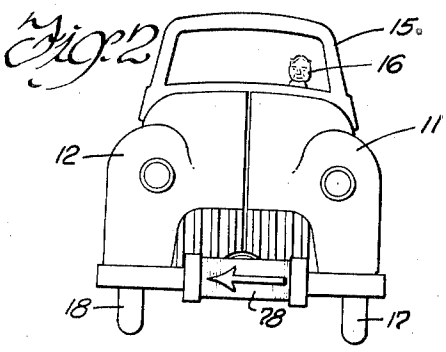


Fig. 3

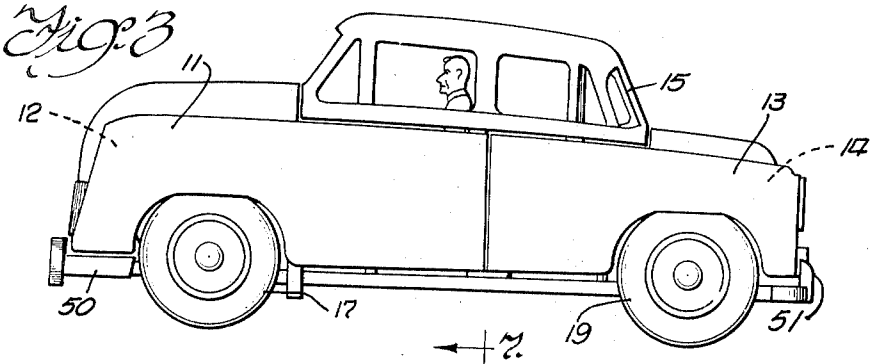
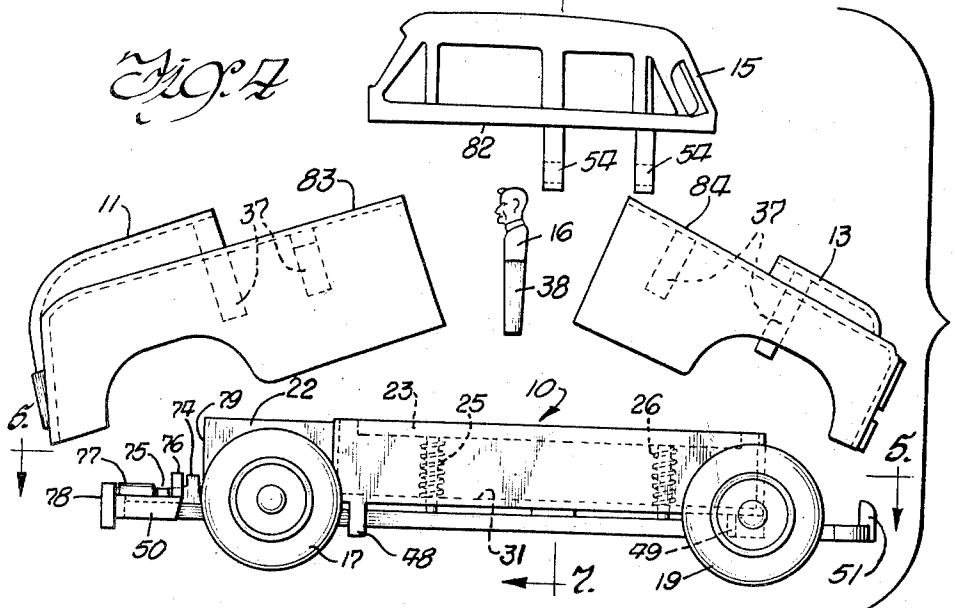


Fig. 4



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Fig. 5

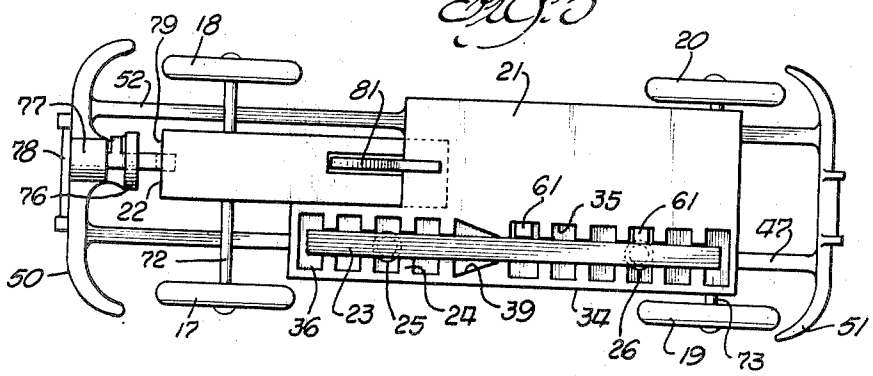


Fig. 6

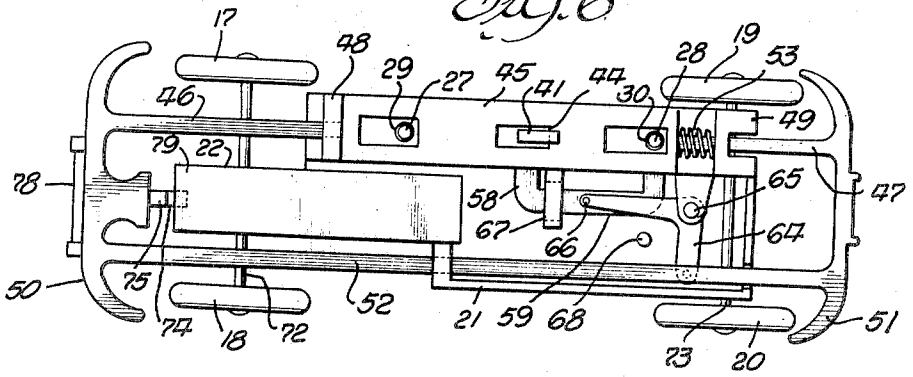


Fig. 8

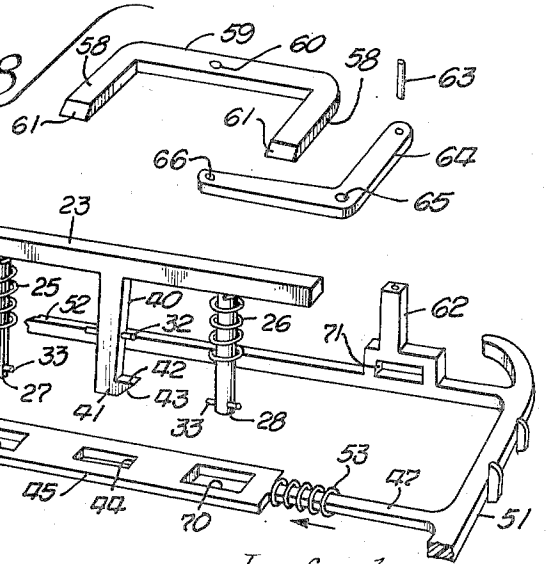
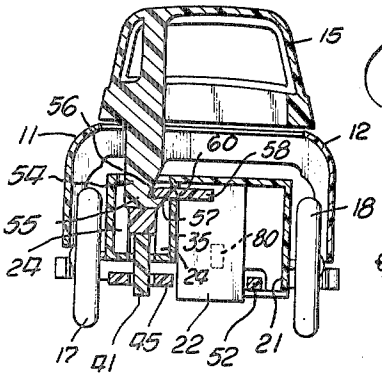


Fig. 7



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SELECTIVELY SELF-WRECKING TOY VEHICLE

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Application November 26, 1954, Serial No. 471,222

2 Claims. (Cl. 46—201)

This invention relates to an entertaining, educational toy which serves to simulate running, wrecking and rebuilding of an automobile. The toy consists of component parts which must be fitted into one another according to a predetermined plan to form a small vehicle. When the parts are so combined the vehicle is able to run like other toy automobiles. Under a set of predetermined conditions the component parts fly apart, wrecking the toy vehicle. However the parts remain intact and can be reassembled any number of times.

Desirably the predetermined conditions under which the vehicle flies apart include a frontal impact upon a front bumper part of the toy vehicle, as in a head-on collision of a car. Furthermore the wrecking of the vehicle is desirably conditioned upon a predetermined setting of a control element. By manipulation of said element the toy vehicle can be operated so that once it is wrecked and the next time it is not wrecked upon the same kind of a frontal impact; thereby adding to the entertaining, curiosity-arousing and educational value of the toy.

The educational value of the toy is further enhanced by the use of interlocking features for the component parts wherein a variety of form-matching elements are utilized; said elements being incorporated in major parts resembling those of an actual car, with motor and other features so arranged as to closely simulate real cars.

These characteristics have been incorporated in a toy which can be manufactured in a rather simple and inexpensive manner. All of the elements coming apart in the wreck are one-piece plastic moldings, with the exception of one basic element which incorporates the mechanism for assembling, locking, controlling and disassembling the parts and which desirably also incorporates the power unit and wheel structure for the car. The carriage incorporating the assembling and disassembling mechanism can be formed of material similar to that of the separable parts; the same thing is true of the principal control parts or leverage elements. The only elements or subelements not formed in this manner are the wheel structure and the power unit for the same, and those latter parts are readily available in suitable forms and extremely cheap. The other parts which have been mentioned of course are of special design but all of them can be produced in one and the same manufacturing operation, involving the use of a conventional plastic molding machine.

The details will best be explained in connection with the drawing appended hereto wherein a preferred form of the new toy vehicle is shown and wherein:

Figure 1 is a front view of the vehicle with a control plate set to wreck the vehicle upon a front impact.

Figure 2 is a view similar to Figure 1 but with the control plate set to prevent wrecking of the vehicle upon a front impact.

Figure 3 is a side view of the vehicle when properly assembled.

Figure 4 is a side view of the vehicle in process of coming apart upon a front impact.

Figure 5 is a detail view taken along lines 5—5 in Figure 4.

Figure 6 is a bottom view of the part shown in Figure 5.

Figure 7 is a sectional view taken along the lines 7—7 in Figure 4 but showing the vehicle as reassembled and

Figure 8 is an exploded perspective view of the mechanism used to trigger and effect the wrecking of the vehicle and to lock the parts together on reassembly.

Referring first to Figures 1 to 4 the toy vehicle comprises, as principal component parts to be separated in a wreck, a basic carriage structure **10**, a pair of front fender units **11**, **12**, a pair of rear fender units **13**, **14**, a body and top unit **15** and the figure of a driver **16**.

The carriage **10** comprises a pair of front wheels **17**, **18**, a pair of rear wheels **19**, **20**, a frame or chassis unit **21** with a front wheel power unit **22** thereon and with operating mechanism connected therewith as will now be described.

For this purpose reference will best be made to Figures 5 to 8. A principal part of the mechanism consists in the ejector bar **23** which serves to eject the parts **11** to **16** from the carriage **10** upon a wreck and which is most clearly shown in Figures 5 and 8. It extends longitudinally of the vehicle and is arranged in a more or less floating condition between a set of guide ribs **24** restraining the bar to vertical motion. A pair of compression coil springs **25**, **26** urge the bar **23** upwards. These springs are desirably centered by pins **27**, **28** which are rigid with and depend from the bar **23**. These pins extend respectively through holes **29** and **30** in the bottom **31** of the chassis **21** whereas the lower ends of the springs **25**, **26** rest upon that bottom as a lower abutment. Upper and lower limit stop members **32**, **33** can be provided in an obvious manner. The guide ribs **24** are incorporated in suitable longitudinal walls **34**, **35** of the chassis.

Between and adjacent the guide ribs **24** openings **36** are formed in the space confined by the walls **34**, **35**. These openings serve to receive mounting keys or pegs **37** which are integral with the parts to be assembled and disassembled such as fenders **11**, **13**, etc., see Figure 4. It will be understood that these mounting keys are concealed when the car is assembled; for this purpose each of them is on the underside of the corresponding part and is entirely sunk into the corresponding recess **36** of the carriage **10**. The bar **23** is depressed for this purpose; this can be achieved for instance by the mounting key or peg **38** of the driver **16**, which is conveniently located about midway of the bar **23** and series of recesses **36**. In order to facilitate rapid assembly of the vehicle it is preferred to shape the central or primary mounting peg **38** in a distinctive manner, for instance with approximately triangular cross-section and to shape the matching recess **39** in corresponding manner, while all other pegs and recesses **37**, **36** can have, for instance, approximately rectangular cross-section.

When the driver **16** has been inserted in the recess **39**, depressing the bar **23** against the upward push of the springs **25**, **26**, a central, depending pin **40** descends with the bar. This pin carries at its lower end a hook **41** having a horizontal top surface **42** and a slanting end surface **43** forming a relatively sharp edge with the horizontal surface **42**. With the parts **11** to **16** disassembled the hook **41** lies with the top surface **42** directly under the bottom **31** of the chassis. When depressed in a manner as described the hook surface **43** engages a horizontal edge **44** in a yoke member **45** underlying the chassis. This yoke member is rigid with a system of guide pins **46**, **47** extending longitudinally of the chassis and suitably guided in bearings **48**, **49**, see Figures 4 and 6. The structure **45**, **46**, **47** is integral with a front bumper **50**, a rear bumper **51** and an additional guide pin or yoke

element 52 whereby the parts 45, 46, 47, 50, 51 and 52 form a rigid frame, longitudinally shiftable below the chassis 21. A slight backward shift of this frame occurs when the descending surface 43 engages the edge 44; thereupon, when the hook 41 has been depressed to a point below the yoke 45 the yoke and parts rigid therewith are forwardly returned by the pressure of a coil compression spring 53 interposed between the bearing 49 and the yoke 45. Thereupon the bar 23 is locked in its depressed position and the parts 11 to 16 can be assembled with the carriage 10 without any interference by the action of the springs 25, 26.

In order to enable the car to be manipulated safely and also to run rapidly and with vibration but without premature wrecking the parts 11 to 15 are not only assembled with the carriage 10 but actually locked therein by a further mechanism most clearly shown in Figures 6, 7 and 8. This mechanism uses a latching action similar to that of the hook 41 and actuated by the same spring 53. However the hook mechanism for the parts assembling and disassembling function is desirably made independent of the hook mechanism for the ejector bar to the extent that the parts may first be unlocked and then impacted upon for ejecting. By this expedient the impact at bumper 50 causes inactivation of a parts-combining member, to be described presently, and the release of the parts-ejecting force of springs 25, 26; thereby allowing small springs 25, 26 to eject seemingly well-fitted and sturdy parts 11 to 16. For these purposes the mounting keys 54 of the body and top unit 15 have hook elements 55 incorporated in their lowermost parts; each of these hook elements having a horizontal top surface 56 and a slanting bottom surface 57 coming to an edge with the surface 56. A pair of parallel latch pins 58 rigidly interconnected by a bar 59 extend through holes 60 in the inner chassis wall 35; these latch arms having horizontal lower surfaces and slanting upper end surfaces matching the hook surfaces 57 as shown at 61 so that upon downward insertion of the keys 54 the latch member 58, 59 tends to move outwardly of the recesses 36 wherein it was first inserted, see Figure 5. Such outward movement is resiliently counteracted by the spring 53 through the intermediary of linkage which comprises a boss 62 on the pin or bar 52; a vertical pivot pin 63 upwardly extending from said boss; a bell crank lever 64 suitably pivoted to the underside of the chassis as at 65; and a pivot 66 interconnecting the bell crank with the center of the bar 59. It will be seen that forward movement of the bumper and pin structure 50, 51, etc., normally induced by the spring 53, moves the bell crank so as to insert the latches 58 in their recesses 36 but that a very slight backward movement of the bumper structure, magnified by a suitable design of the bell crank lever 64, withdraws the latch, unlocking the hooks 55 of the top 15. In order to insure proper movements of the latch structure 58, 59 additional guide and stop members 67, 68 may be provided.

The assembling and disassembling, locking and unlocking structure as described is completed by suitably elongated recesses 69, 70 in the yoke 45 for the lower ends of the pins 27, 28 and corresponding recesses 71 in the bar and boss structure 52, 62 avoiding interference by the axles 72, 73 of the carriage wheels.

Wrecking of the car is prevented in spite of violent front impacts by a mechanism of the utmost simplicity which prevents longitudinal shifting of the yoke and bar structure, thereby preventing release of the lock mechanism for the top structure and of the ejecting mechanism. For this purpose the front bumper 50 is provided with a stop member 74, see Figure 4, which is rotatable on a horizontal shaft 75 longitudinal of the car and journaled in bearings 76, 77 integral with the bumper structure. Turning of the shaft and stop can be effected by means of a handle in the shape of a front plate 78 which is rigid with the shaft 75 and disposed on the outside of the car whereas the stop 74 is disposed under the front fenders 11, 12 and adapted to come to a stop against the front wall 79 of the power unit 22. In the position of Figure 1 such abutment is in effect and the yoke, etc. is thereby prevented from releasing the mechanism described.

In the position of Figure 2 the plate 78 is reversed thereby reversing the stop member 79 which extends at right angles from the shaft 75. In this latter position of the stop member said member is free to pass through a suitable opening 80 in the wall 79; sufficient clearance being provided in the standard power unit to allow this operation. As a result the yoke mechanism is now free to release the parts and impact between the front bumper 50 and any obstacle result in the wrecking of the car.

It will be noted that the entire mechanism is assembled in the carriage 10 and that all special parts thereof such as the chassis, ejector, yoke, top member latch and bell crank, can be molded from the same material, such as synthetic resinous plastic of high impact strength. All remaining parts such as the wheels, axles, power unit, springs and pivot pins are standard parts of the utmost simplicity. The power unit 22 may desirably be a so-called friction motor which is actuated by rotating the wheels 17, 18 and continuing their rotation with the aid of a flywheel (not shown). It may further be desirable to incorporate a small spring 81 secured to the chassis 21 and extending into the motor 22 so as to slide over a pinion or gear and to produce a sound simulating that of a racing engine.

The toy may be sold either in assembled or disassembled condition. In the latter event operation starts with assembly of the driver 16 with the carriage 10, whereby the ejector springs are loaded as described above. The fenders 11 to 14 can then be assembled with the carriage 10. Their keys 37 rest only loosely in the corresponding recesses 36. However, the top unit 15 is then superimposed and assembled with the parts 10 to 14. It will be noted from Figures 4 and 7 that a lower edge 82 of this top part 15 rests on upper edges 83, 84 of the fender units, holding these against any tendency to rise up from the carriage 10 while the top 15 is held down by the lock 55, 58. It will also be noted that with this construction a definite sequence of assembly operations must be maintained by virtue of the vertical contour design of the guiding ribs 24 which enforces vertically downward insertion of the parts starting with the driver 16, continuing with the fenders and ending with the top. When the top has been superimposed and slightly depressed a click will be heard due to the latching action at 55, 58.

The toy vehicle is then in condition for operation. For a first run the handle 78 may be turned so as to allow front impact without wrecking and such a run is then performed in well-known manner. Next the front handle 78 is reversed—an operation which will become obvious to a child only after some observation—and upon the next run against any obstacle the car will practically explode. It can then be reassembled in the same sequence as stated and the operation can be repeated and explained as may be desired.

It will be understood by persons skilled in the art that a number of the features described can be omitted and others modified and that other changes can be made within the scope of this invention. This scope is claimed as follows:

1. A self-wrecking toy vehicle comprising a wheeled carriage; a set of vehicle body members adapted to be assembled with one another, and with the carriage, to be disassembled and to be reassembled; an ejector member formed by a first horizontal bar longitudinally extending in the carriage and vertically movably secured thereto in contact with at least a number of said vehicle body members which follow one another longitudinally along the carriage; a vertically extending latch bar rigid with the ejector member, said latch bar and ejector

member being downwardly movable in the carriage for fastening the vehicle body members and the carriage together; means for downwardly moving said latch bar and ejector member by hand; spring means in the carriage for upwardly moving said latch bar and ejector member and the vehicle body members in contact therewith; a horizontally extending latch bar horizontally movable in the carriage for engaging the vehicle body members in their assembled position wherein they contact the downwardly moved ejector member and for thereby holding said spring means in loaded position; a front bumper on the carriage; a trigger formed by a second horizontal bar longitudinally extending in the carriage, for engaging the vertically extending latch bar and thereby additionally holding said spring means in loaded position, so that backward moving of the front bumper and trigger moves both latch bars for disengaging them, successively, in order to first loosen and then eject the vehicle body members; spring means in the carriage for normally urging the trigger and bumper forwards but yieldingly allowing them to move backwards upon a front impact of the vehicle; a manually operable member on the carriage adapted selectively to stop and to allow such backwards moving of the trigger; and means for propelling the carriage.

2. A self-wrecking toy vehicle as described in claim 1 wherein the manually operable member for selective stopping and allowing backward moving of the trigger comprises a plate, simulating the license plate of a car and rotatably secured to the front bumper so that it can be turned to different positions, thereby either allowing forcible ejection of the vehicle body members upon a slight front impact of the vehicle or preventing any ejection of the vehicle body members even upon a violent impact.

References Cited in the file of this patent

UNITED STATES PATENTS

1,098,151	Heilprin	May 26, 1914
1,288,813	Blackshear	Dec. 24, 1918
1,363,891	Lovington	Dec. 28, 1920
2,597,094	Gutman	May 20, 1952