July 11, 1961 M. I. GLASS ET AL 2,992,004

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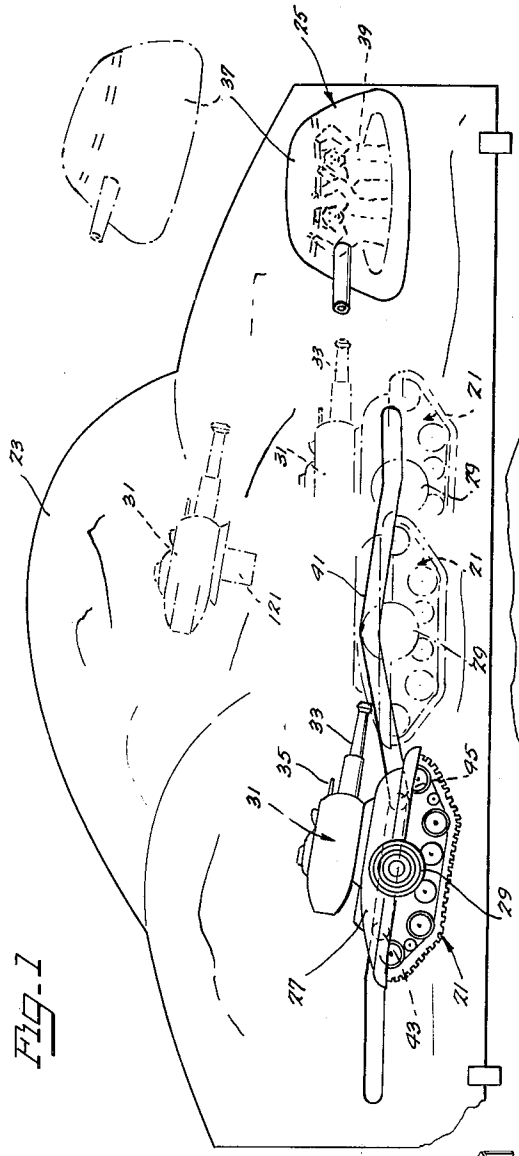


Fig. 1

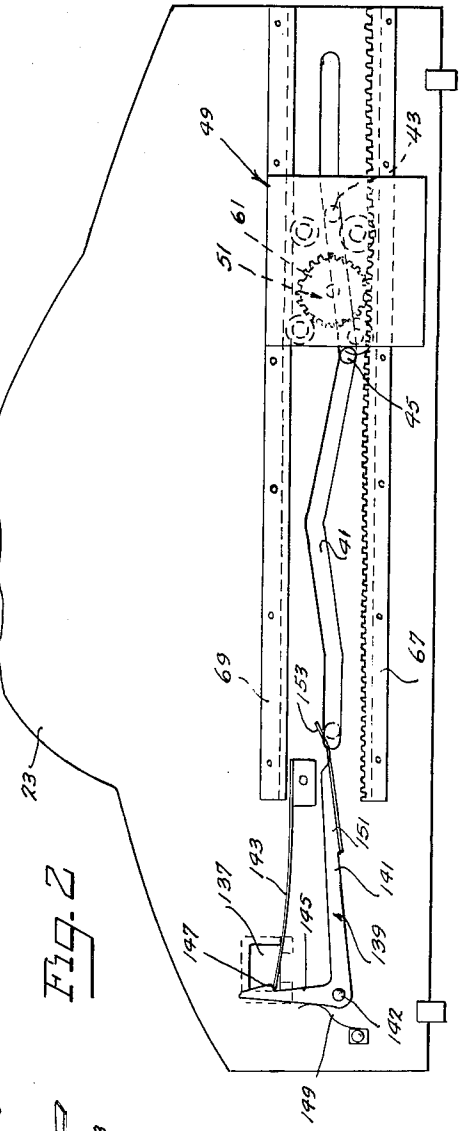


Fig. 2

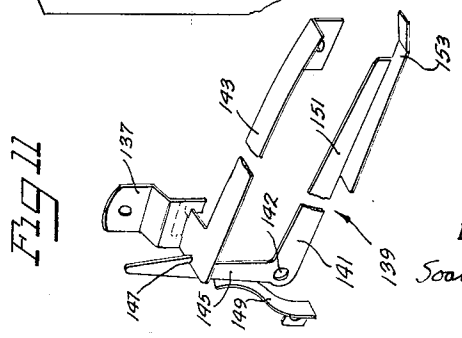


Fig. 11

INVENTORS
MARVIN I GLASS
BY LEONID KRIPAK
Soans, Anderson, Luedeka & Fitch

July 11, 1961 M. I. GLASS ET AL 2,992,004

TOY

Filed Aug. 7, 1958 2 Sheets-Sheet 2

Fig. 3

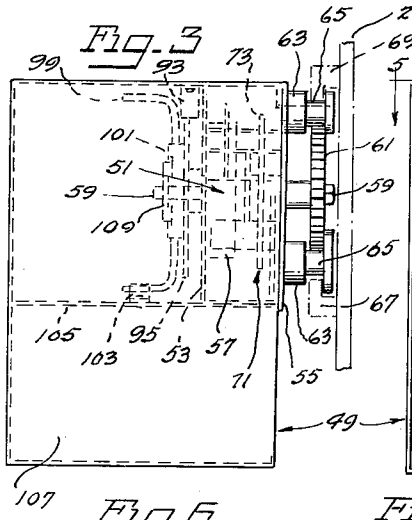


Fig. 4

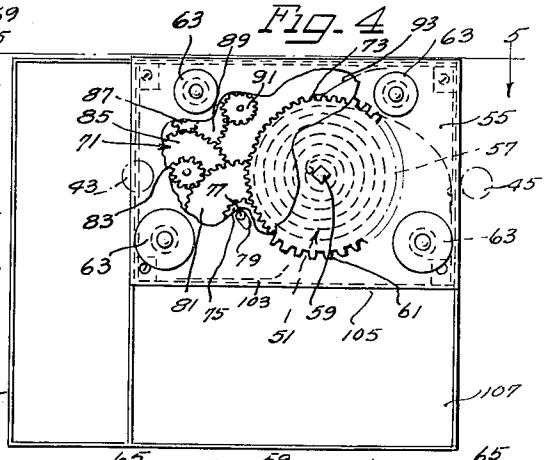


Fig. 6

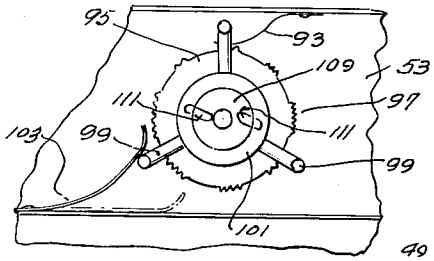


Fig. 5

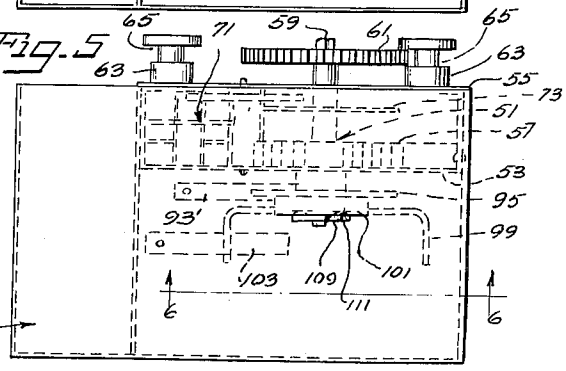


Fig. 7

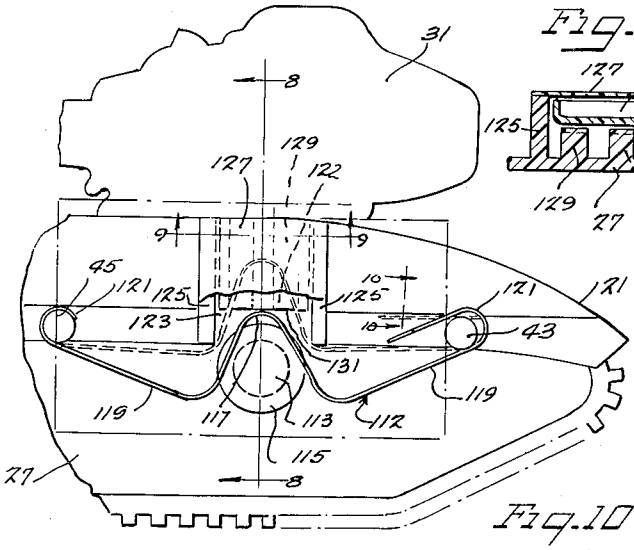


Fig. 9

Fig. 8

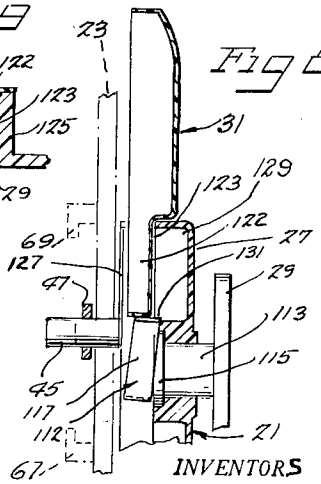
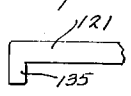


Fig. 10



INVENTORS
MARVIN I GLASS
BY LEONID KRIPAK
Soans, Anderson, Luedeka & Fitch

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TOY

Marvin I. Glass, 57 E. Ohio St., Chicago, Ill., and Leonid Kripak, Elmhurst, Ill.; said Kripak assignor to Marvin I. Glass, Chicago, Ill.

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The present invention relates generally to target toys, and more particularly to a toy having a target which moves toward an objective and which produces one effect if properly struck by a missile, or which produces an alternative effect if the target reaches the objective.

Accordingly, the principal object of the present invention is the provision of a new and improved target toy.

A further object of the present invention is the provision of a toy having a moving target which produces a visual and/or audible effect if properly struck, and if not struck, continues its travel toward an objective to produce a different effect.

Still another object of the present invention is the provision of a toy of the type described above having a moving target resembling a tank which travels toward an objective simulating a bunker to produce an effect simulating the explosion of the objective. However, proper striking of the target before the simulated explosion of the objective effects a visual action simulating the destruction of the tank.

A still further object of the present invention is to provide a toy of the type described which is simple and easy to operate and which may be economically fabricated and sold at an inexpensive price.

Other objects and advantages of the present invention will be understood by reference to the following description and the accompanying drawings of one embodiment of a target toy in accordance with the invention.

In the drawings:

FIGURE 1 is a front elevational view of a target toy which embodies various of the features of the present invention;

FIGURE 2 is a rear elevational view of the toy seen in FIGURE 1;

FIGURE 3 is a side view of the mechanism which drives the target;

FIGURE 4 is a front view partially broken away of the mechanism shown in FIGURE 3;

FIGURE 5 is a view taken along line 5—5 of FIGURE 4;

FIGURE 6 is a view taken along line 6—6 of FIGURE 5;

FIGURE 7 is an elevational view of the rear of the target shown in FIGURE 1;

FIGURE 8 is a view taken along line 8—8 of FIGURE 7;

FIGURE 9 is a view taken along line 9—9 of FIGURE 7;

FIGURE 10 is a view taken along line 10—10 of FIGURE 7; and

FIGURE 11 is a perspective view illustrating a portion of the release mechanism also shown in FIGURE 2.

Pictured generally in the drawings, and particularly in FIGURE 1, is a moving target game which embodies various of the features of the present invention. The game comprises a target which travels toward an objective and which functions at the end of its travel to produce a visual effect associated with the objective. However, should the target be properly struck before completing its trip, a separate audible and/or visual effect associated with the target is produced. Thus, it will be seen that the present invention includes a target which moves toward an objective and provides for alternate effects, one of which is associated with the target when the target is properly hit and the other of which is associated with the objective if the target is not properly hit.

More specifically, the illustrated embodiment includes a target simulating a tank 21 which travels across a board or backdrop 23 toward an objective resembling a pillbox or bunker 25. The tank includes a body 27 which carries a target disc 29 and a turret 31 having a cannon 33 and a machine gun 35. When the disc 29 is hit, the movement of the tank is stopped, and the turret is ejected to realistically simulate the destruction of the tank. The bunker 25 includes a dome 37 which is ejected incident to the completion of the tank's travel to simulate the destruction or explosion of the bunker. In this connection, a group of surrendering soldiers 39 are seen in the bunker when the dome is displaced.

In addition, a suitable noise producing arrangement is also provided for realistically simulating firing action of the cannon 33 and machine gun 35 as the tank approaches the bunker 25. When the target is properly struck, the sound effect is discontinued.

As seen particularly in FIGURE 1, the tank seen therein is fabricated from plastic or other suitable material, and travels toward the bunker 25 along a zigzag path or slot 41 formed in the board 23. In this connection, the tank body 27 is supported in the slot 41 by a pair of rearwardly extending pins 43 and 45. As seen particularly in FIGURE 8, one of the pins 45 includes a retaining ring 47 which prevents displacement of the pin from the slot 41 and thereby maintains the tank body in position on the board.

The tank is propelled along the board by contacting engagement of the pin 45 with a housing 49 which travels along the rear surface of the board, as seen particularly in FIGURE 2. The housing 49 is desirably fabricated of plastic into a number of compartments, one of which houses a mechanism including a spring operated motor 51. As seen in FIGURES 3, 4 and 5, the motor 51 is carried in a frame between a pair of spaced apart plates 53 and 55 and comprises a flat spiral spring 57. The spring 57 is fixedly secured at one of its ends to a main shaft 59 journalled through the plates 53 and 55 and is suitably anchored at its other end to the housing 49 so that rotation of the main shaft in the counterclockwise direction, as seen in FIGURE 4, operates to wind-up the coil spring 57. The coil spring 57 operates to drive the housing, or alternately, is coiled or wound-up through the agency of a gear 61 affixed to the main shaft 59 outwardly of the plate 55.

The housing 49 is supported for travel across the rear of the board 23 by a number of forwardly projecting guide pins 63 extending from the plate 55. Each of the pins 63 is formed with an annular groove 65 which coacts with one of a pair of rails 67 and 69 secured to the rearward side of the board. In this regard, the lower rail 67 is formed with a rack which engages the gear 61 carried on the main shaft 59. Thus, when the housing is moved to the right, as in FIGURE 2, the spring is wound-up by rotation of the gear 61 as it moves along the lower rail 67. When the housing is released, the coiled spring drives the gear 61 along the rail 67 to propel the housing and tank to the left.

The rate of travel of the tank 21 across the board to the bunker 25 is slowed by the incorporation in the housing of a friction gear train 71 which operates through a uni-directional clutch mechanism to slow or retard the unwinding of the spring without affecting the ease with which the spring may be coiled or wound. The gear train 71 is engaged with the spring motor by reason of a gear 73 fixed on the main shaft 59 between the plates 53 and 55, see FIGURES 3, 4 and 5. The gear 73 meshes with a pinion 75 carried on a shaft 77 journalled in an aligned pair of curved slots 79 in the plates 53 and 55. When

the spring is driving the tank toward the bunker, the pinion **75** is rotated in the counterclockwise direction as seen in FIGURE 4 and travels upwardly in the aligned slots **79** so that the gear **81** also carried by the shaft **77** engages a pinion **83**. The pinion **83** is carried on a shaft which also supports a gear **85**. In turn, the gear **85** drives another pinion **87** which is fixedly connected to a gear **89**. Finally, the gear **89** drives a pinion **91**. The friction generated in driving the various enumerated gears and pinions slows the action of the spring driving the tank across the board toward the bunker. It will be readily understood that this arrangement may be readily varied, as desired, so as to vary the speed of the tank.

On the other hand, when the housing is moved to the right, in FIGURE 2, to wind-up the spring **57**, the pinion **75** carried by the shaft **77** rotates in the clockwise direction, as seen in FIGURE 4, and the shaft moves to the bottom of the slots **79** to disengage the remainder of the gear train **71**. In this manner, the coil spring may be readily wound or coiled without interference with the friction train.

The housing **49** also includes a means for producing a noise effect operating incident to the travel of the tank toward the bunker and simulating the firing of the cannon and machine guns mounted on the turret. In this regard, as seen best in FIGURES 5 and 6, the machine gun firing effect is produced by the action of a reed or vibrator **93** which is secured to the top of the housing and which acts against a flat circular member **95** journalled on the main shaft **59** outwardly of the plate **53**. The member **95** includes a series of randomly oriented, interrupted gear teeth **97** so that when the plate rotates a sporadic staccado noise effect is produced. The cannon firing noise effect is produced by a number of outwardly extending ears or dogs **99** which are carried by a hub **101** fixed to the plate **95** and which are arranged to intercept a spring blade **103** mounted on an intermediate partition wall **105** which in cooperation with other walls of the housing defines a sounding chamber **107**.

As the cannon and machine gun firing action is produced only as the tank approaches the bunker, there is fixed to the main shaft **59**, outwardly of the hub **101**, a one way clutch **109** having an opposed pair of inwardly directed ears **111** which engage a cooperating pair of recesses in the hub **101**. In this connection, the ears and the cooperating recesses are formed so that when the tank moves away from the bunker, and the shaft **59** rotates in the counterclockwise direction, as shown in FIGURE 6, the ears travel up inclined surfaces of the recesses disengaging the driving connection between the clutch **109** and the hub **101**. However, when the tank travels toward the bunker, the main shaft **59** rotates in the clockwise direction, as shown in FIGURE 6, and the ears of the clutch **109** abut against the walls of the recesses to provide a driving connection which rotates the hub and plate in the clockwise direction. This effects operation of the reed **93** against the rotating teeth segments **97** to produce the machine gun firing effect and rotation of the dogs **99** which first operate to distend the blade **103** from its normal position and then release the blade for rapid striking against the partition **105** to produce a loud report to simulate cannon fire.

When the target disc **29** is properly struck, the turret **31** is ejected to simulate the explosion of the tank by action of an operating spring **112**, see FIGURES 7 and 8. In this connection, the target disc is carried at one end of a rod **113** which extends through a central opening in the tank body. The other end of the rod is formed with a flange portion **115** which prevents displacement of the target disc **29** from the tank body and which also acts against the spring **112** in response to striking of the disc to release the spring from its cocked position. The operating spring **112** is formed with a central U-shaped portion **117**, a wing segment **119** extending outwardly from each of the legs of the U-shaped portion, and an ear **121** at the end of each of the wing segments **119**. The spring **112** is supported within the tank body by engagement of the ears **121** about the pins **43** and **45** and is cocked from its untensioned position, seen in dotted outline in FIGURE 7, to its tensioned position, seen in full outline in FIGURE 7, by insertion of the turret **31** within the tank body **27**.

The displaceable turret **31** includes a tab **122** which is insertable within a recess **123**, see FIGURE 9, formed in the tank body by a pair of vertically disposed, rearwardly extending webs **125**, which define the side to side width of the recess, and a backplate **127** which connects the ends of the webs. Located between the webs **125** are a pair of vertically disposed ribs **129** which, together with the backplate **127**, define the front to back depth of the recess. The webs are each additionally formed with an inner shoulder **131**, see FIGURE 8, under which the central spring portion **117** snaps incident to cocking of the spring. Thus, when the target disc **29** moves inwardly, as a result of the impact of a projectile, the flange portion **115** contacts the cocked spring **112** and dislodges it from its position of engagement with the shoulders **131**. When released, the central portion of the spring moves rapidly upwardly and ejects the turret from the tank body.

Striking of the disc **29** also causes the travel of the tank to be arrested and the operation of the sound producing means to be discontinued. This result is accomplished by the provision, as seen in FIGURE 10, of a braking tab **135** which extends from the spring ear **121** disposed about the support pin **43** and which projects inwardly of the slot **41**. When the spring **112** is cocked, the braking tab **135** is spaced intermediate the edges of the slot **41**, however, when the spring is released, the braking tab engages the upper edge of the slot and acts to brake the travel of the tank. Of course, when the tank is thus stopped, the motor is prevented from rotating, and the operation of the sound producing means is also discontinued.

The bunker or pillbox **25** is formed at one end of the board **23** adjacent the end of the tank's travel. As previously mentioned, the pillbox **25** includes a dome **37** which simulates the top of the bunker and which covers a pictorial representation of a group of surrendering soldiers. The dome **37** is secured to and supported by means of a bracket **137**, see FIGURE 11, which extends through an opening in the board and engages with a spring-powered mechanism **139** carried on the rear of the board.

The cover ejecting mechanism **139**, as seen particularly in FIGURE 11, is mounted on the rear of the board and comprises a bell crank **141** which is pivotally carried on a pin **142** supported in the board, and a spring blade **143** which is also attached to the board, and which is engageable with the bracket **137** for support of the dome **37**. The spring blade **143** is positioned in a tensioned condition by location of the dome **37** in covering relation to the bunker **25**, and in this condition, is engaged by the bell crank **141**. More particularly, the bell crank **141** includes a generally upwardly extending leg **145** having a hook **147** adjacent the upper portion thereof which is engageable with the end of the spring blade **143**. Upwardly of the hook **147** the side of the leg **145** is inclined so as to permit ease of travel of the blade **143** downwardly along the incline. The bell crank **141** is biased in the blade engaging position by means of a spring **149** acting upon the upright leg **145**. The bell crank **141** also includes another leg **151** having an outwardly extending camming fingers **153**. As the tank approaches the bunker **25** the traveling support pin **45** engages the camming finger **153** and rotates the bell crank **141** in a counterclockwise direction, as seen in FIGURE 2, to release the spring blade **143**. Release of the blade from its position of tension throws the dome **37** upwardly and outwardly to expose the surrendering soldiers within the pillbox.

In operation, the turrent 31 is first located on the tank 21 and the dome 37 is positioned in covering relation to the bunker 25. The tank is then pulled away from the bunker to wind-up the motor. When the tank is released, it moves toward the bunker and realistically produces an interrupted sound effect simulating the firing of the cannon and machine guns mounted on the turret. A dart gun, or other missile propelling means may be utilized in firing at the target disc on the tank. If the disc is properly struck, the tank stops, the turret is thrown from the tank, and the cannon and machine gun firing action ceases. If the target disc is missed, the tank continues its travel toward the bunker and engages the mechanism 139 which acts to eject the dome from the bunker and to thereby expose the soldiers pictured therein. Thus, if the target in the tank is not properly struck, the toy operates to produce a realistic effect which gives the appearance of exploding or destroying the pillbox. If the tank is properly struck, a simulated action results giving the impression of destroying or exploding the tank.

Of course, the present invention is not limited to a toy which includes a tank and a bunker. For example, the principles of this invention may be applied to a toy including a warship and a non-combatant ship, or an airplane and a target, or an arrangement including a moving target such as an animal and an objective such as a den. Moreover, various other visual and audible effects may be employed. For example, a sound effect simulating an explosion may be incorporated in either the target and/or objective. Or, a visual effect simulating the use of a flame thrower and/or a resultant conflagration at the objective can also be employed.

Additional changes and modifications may be made in the present disclosure to achieve certain of the features mentioned herein without departing from the principles of the present invention. Various features of the invention are set forth in the appended claims.

We claim:

1. A target toy having a backdrop, an objective located at one end of said backdrop, and a target supported forwardly of said backdrop and moving along a predetermined path formed in said backdrop toward said objective, said target being propelled along said path by a housing driven along the rear surface of said backdrop by a motor located in said housing, said housing including noise producing means operatively driven by said motor, said target including a main body having means extending through said backdrop for engagement with said housing, a target disc extending outwardly of said body, a displaceable segment carried by said body, and means responsive to the striking of said disc for displacing said segment, for stopping the movement of said target, and for discontinuing the operation of said sound producing means, said objective including an ejectable member and means responsive to the movement of said target past a predetermined point on said path for ejecting said member.

2. A target toy having a backdrop, an objective simulating a bunker located at one end of said backdrop, and a target simulating a tank supported forwardly of said backdrop and moving along a predetermined path formed in said backdrop toward said bunker, said tank being propelled along said path by a housing driven along the rear surface of said backdrop by a motor located in said housing, said housing including a friction gear train releasably engageable with said motor to control the rate of travel of said tank toward said bunker and a noise producing means for simulating cannon and machine gun firing action, said noise producing means being driven through a clutch mechanism incident to the travel of said tank toward said bunker, said tank including a body having rearwardly projecting means extending through said backdrop for engagement with said housing, a target disc extending outwardly of said body, a displaceable turret carried by said body, and spring operated means responsive to the striking of said disc for simulating the destruction of said tank by displacing said turret and by engaging said path to thereby stop the movement of said tank and to discontinue the operation of said sound producing means, said bunker including an ejectable dome and spring operated means responsive to the movement of said tank past a predetermined point on said path for ejecting said dome to simulate destruction of said bunker, said dome ejecting means including a spring blade carrying said dome, and a bell crank having one leg engageable with said spring blade when said blade is placed in a tensioned condition by locating said dome on said bunker, said bell crank having a second leg disposed for engagement with said rearwardly projecting means of said tank body to effect rotation of said crank to thereby release said blade from its tensioned position and to thereby eject said dome from said bunker.

References Cited in the file of this patent

UNITED STATES PATENTS

2,059,918	Straka	Nov. 3, 1936
2,404,653	Plebanek	July 23, 1946
2,479,354	Hanson	Aug. 16, 1949
2,503,877	Kuemmerlein	Apr. 11, 1950
2,819,900	Brackett	Jan. 14, 1958
2,861,808	Musser	Nov. 25, 1958

FOREIGN PATENTS

12,118	Great Britain	1891