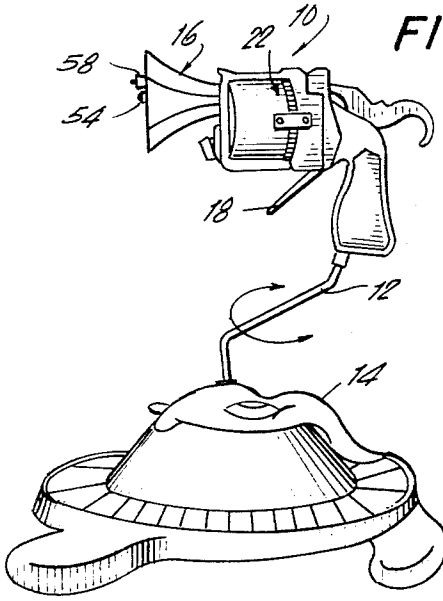
April 15, 1969 A. PEREIDA ET AL 3,438,547

TOY WATER PISTOL

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FIG. 1



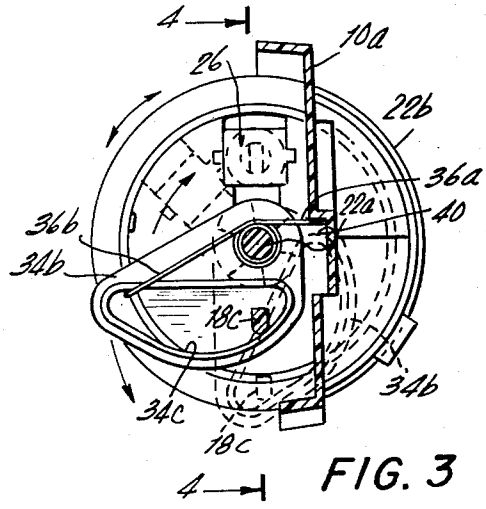


FIG. 3

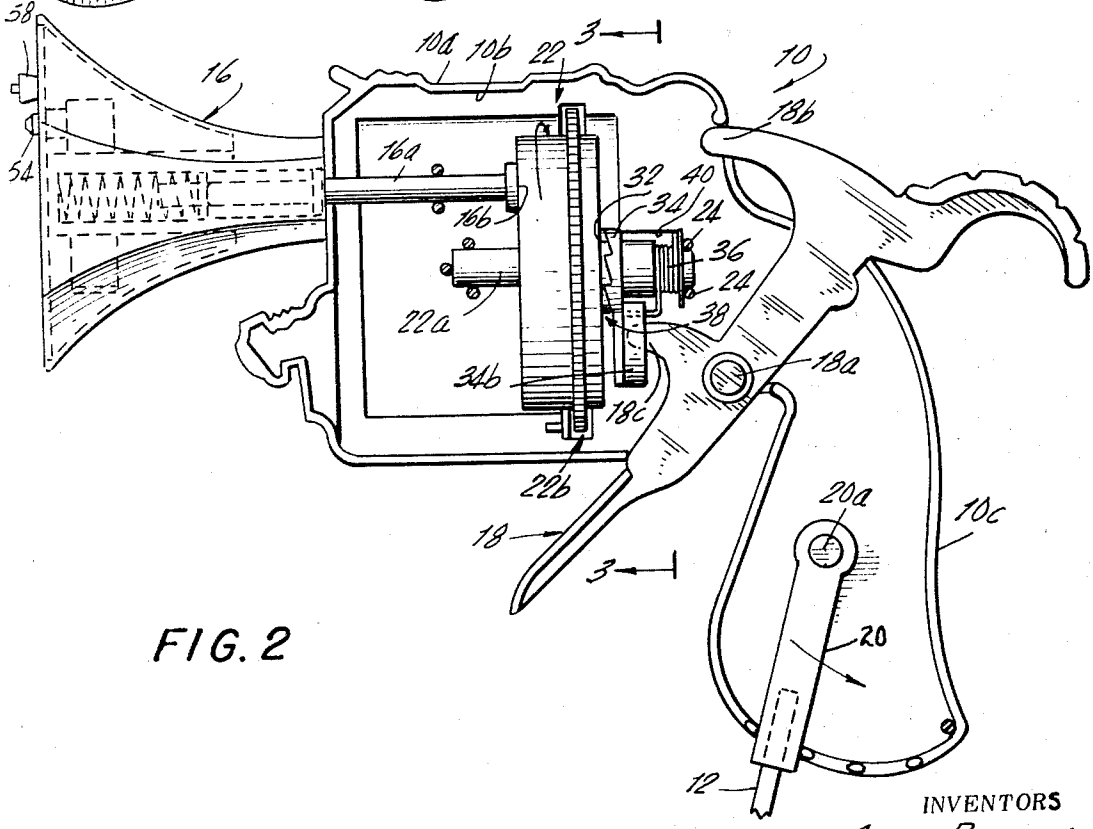


FIG. 2

INVENTORS
ANITA PEREIDA
JULIAN LIBERMAN
BY Amster & Rothstein
ATTORNEYS

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FIG. 4

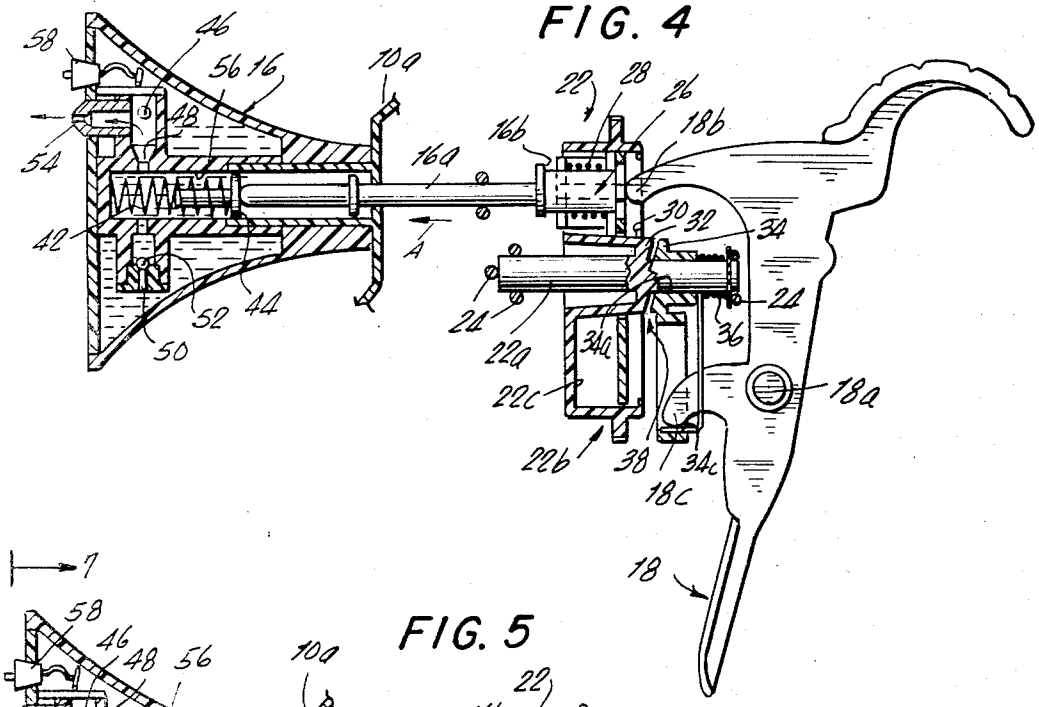


FIG. 5

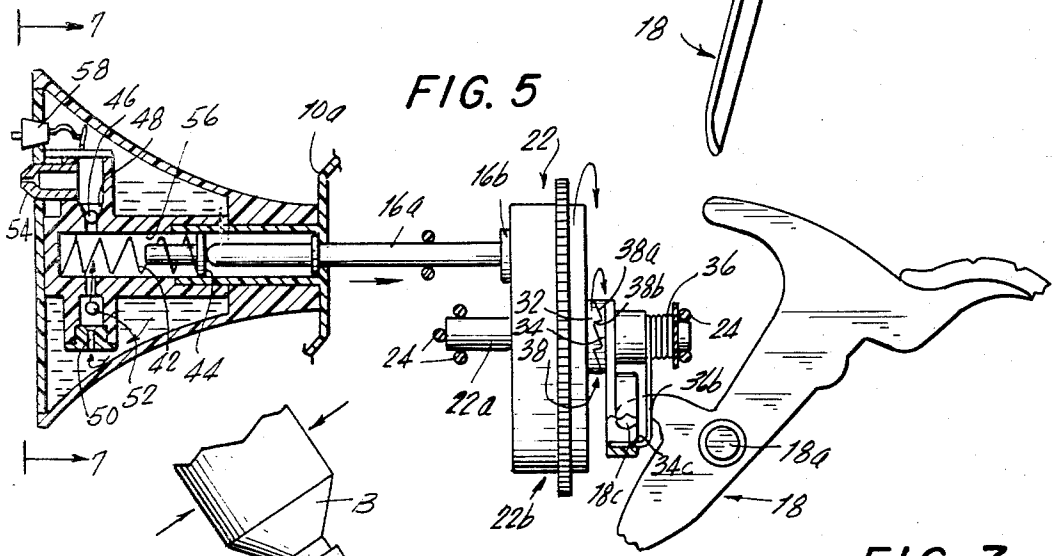


FIG. 6

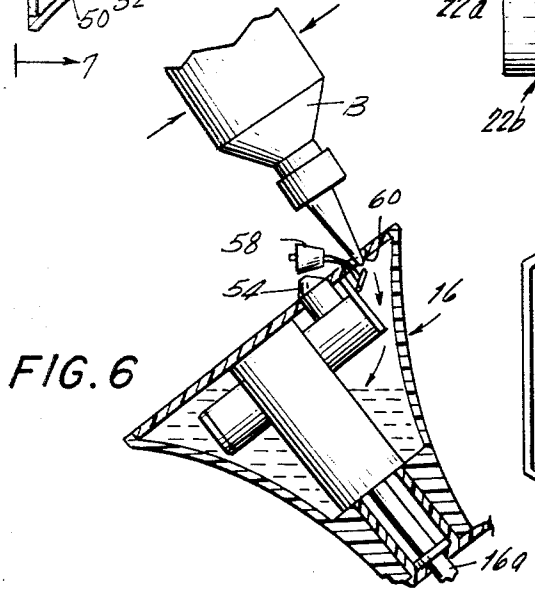
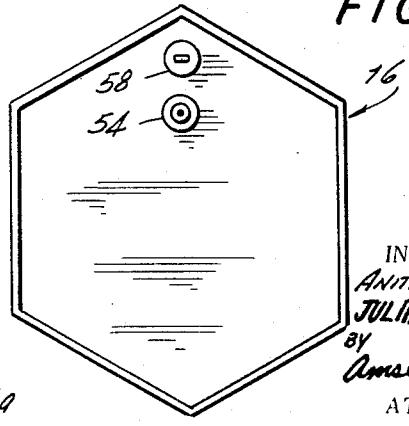


FIG. 7



INVENTORS
ANITA PEREIDA
JULIAN LIBERMAN
BY
Amster & Rothstein
ATTORNEYS

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3,438,547

TOY WATER PISTOL

Anita Pereida, New Canaan, Conn., and Julian Liberman, Scarsdale, N.Y., assignors to Anita Per Limited, New York, N.Y., a corporation of New York

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Int. Cl. F41b 9/00
U.S. Cl. 222—79 5 Claims

ABSTRACT OF THE DISCLOSURE

A toy water pistol having an internal rotating mechanism which cooperates with the trigger in only one position of rotation to eject a stream of water and otherwise fires "blanks"; this functioning being arranged to occur, for all practical purposes, on an unknown random basis which greatly contributes to the play value of the toy gun used by itself or as part of a child's game.

The present invention relates generally to improvements in a toy water pistol, and more specifically, to a toy water pistol which functions in a novel manner contributing greatly to its play value when used alone or as part of a child's game.

There is a constant demand for children's games and toys, and considerable effort is expended to satisfy this demand with products that, by their appearance, mode of operation, or both, have the requisite play value for commercial success. The toy water pistol hereof has the novel attributes of being used by itself, as a conventional water pistol, and also as part of a game; and in both uses has significant play value due to a novel mode of operation. Presently known toy water pistols do not lend themselves to use as part of a game and also are conventional in operation.

Broadly, it is an object of the present invention to provide an improved toy water pistol having a novel mode of operation contributing to its usefulness as a toy per se and also as a part of a game. Specifically, it is an object to provide a toy water pistol which, by design, is not operated with each trigger manipulation and thereby has an element of suspense in its mode of operation. This is readily embodied in the playing concept of many possible children's games as well as adding significantly to the play value of the gun when used by itself.

A toy water pistol demonstrating objects and advantages of the present invention includes a pump, at one end, having a main pump plunger and an internal rotary mechanism advanced by trigger manipulation one position of rotation at a time. Mounted on the rotary mechanism is an auxiliary pump plunger which in one position of rotation aligns with the main pump plunger and thus enables the operation of the pump during the pivotal traverse of the trigger. At other times, however, when the main and auxiliary pump plungers are not aligned, trigger manipulation does not operate the pump.

The above brief description, as well as further objects, features and advantages of the present invention, will be more fully appreciated by reference to the following detailed description of a presently preferred, but nonetheless illustrative embodiment in accordance with the present invention, when taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a perspective view of a toy pistol according to the present invention rotatably mounted on a base;

FIG. 2 is a sectioned elevational view, on an enlarged scale, of the toy pistol illustrating internal structural features thereof;

FIG. 3 is a rear elevational view, in section taken on line 3—3 of FIG. 2, illustrating further structural features;

FIG. 4 is a view similar to FIG. 2 taken in section on line 4—4 of FIG. 3, but is restricted to the internal operating elements of the toy gun and illustrates the trigger of the gun after movement from its cocked position into its operative position actuating the water pump of the gun;

FIG. 5 is a sectioned elevational view similar to FIG. 4 illustrating the functioning of the mechanisms of the gun during return of the trigger to its cocked position;

FIG. 6 is a sectioned elevational view of the pump-end of the gun illustrating the filling of the pump with water; and

FIG. 7 is a front elevational view of the pump-end of the gun taken in the direction of the arrows along line 7—7 of FIG. 5.

Reference is now made to the drawings, and in particular to FIG. 1, wherein a toy gun **10** demonstrating objects and advantages of the present invention is shown mounted on a support **12** rotatably mounted on a base **14** and, as such, serving as part of a child's game. The playing sequence of this game is as follows: the gun **10** is rotated into a position in which the pump-end **16** is directed towards one of the players; another player then actuates the trigger **18**; the trigger **18** can either operate pump **16** or not operate this mechanism depending upon the condition of the internal mechanism of the gun **10**, all as will now be explained in detail. That is, in some instances the trigger **18** will be effective in causing the pump **16** to harmlessly eject water at a player and, at other times, is not effective in achieving this result; this functioning of the trigger **18** being determined on a strictly random basis thereby greatly adding to the suspense of operating the water gun **10** and thus contributing to the play value of the game incorporating the water gun **10** as a part thereof.

Since the essence of the invention resides in the construction of and functioning of the water gun **10**, the present description is appropriately confined to these aspects of the gun **10** as clearly illustrated in FIGS. 2–7, to which attention is now specifically directed. The water gun **10** includes a housing formed by cemented halves **10***a* defining a front internal chamber **10***b* and, at its opposite end, is shaped as a conventional revolver hand grip **10***c*.

As best shown in FIG. 2, a member **20** pivotally mounted within the hollow hand grip **10***c*, as at **20***a*, mounts the gun on the support rod **12**.

The trigger **18** is pivotally mounted, as at **18***a*, at the juncture between the hand grip **10***c* and the front housing section **10***a* and is normally maintained under a spring bias in the inclined cocked position as illustrated in FIG. 2. The user of the gun **10**, however, by squeezing the trigger **18** against the hand grip **10***c* in the usual manner, actuates the same from its cocked position into its operative position, as illustrated in FIG. 4. In its operative position an upper trigger lateral projection **18***b* is brought into physical abutment with an internal rotary mechanism **22** which is operatively disposed within the internal chamber **10***b*. Upon release of the trigger **18**, a portion of the rotary mechanism **22** which is engaged with a trigger lower lateral projection **18***c* returns the trigger **18** to its cocked position of FIG. 5.

Turning now to a more detailed description of the rotary mechanism **22**, this mechanism includes a horizontally oriented shaft **22***a* appropriately journalled for rotation, as at opposite ends, by pins **24** straddled between the two housing halves **10***a*. Integrally formed on the shaft **22***a* is a radial disc **22***b* having walls defining a chamber **22***c*. As is perhaps best shown in FIGS. 3, 5, appropriately disposed for axial movement in one section of the chamber **22***c* is an auxiliary pump plunger **26** normally seated under bias of a helical spring **28** against a circumferential projection or seat **30** and movable

therefrom through a power stroke A by the trigger upper projection **18***b* in response to manipulation of the trigger **18** by the user of the gun.

Shaft **22***a* has integrally formed thereon a driven gear **32** which, as best shown in FIGS. 2, 5 and 7, is in meshing engagement with a driving gear **34** having a central opening **34***a* accommodating the shaft **22***a*. A helical spring **36** disposed about the end of a shaft **32***a* is seated between the pins **34** and the driving gear **34** and is effective in urging the gears **34**, **32** into meshing engagement. The cooperating teeth of the respective gears **32**, **34**, herein collectively designated **38**, include, as best shown in FIGS. 2, 5, inclined walls **38***a* and straight walls **38***b*. As generally understood, this construction of the teeth **38** enables the driving gear **34** to drive the driven gear in only clockwise rotation when the straight walls **38***b* engage each other; in the opposite or counterclockwise direction, the inclined walls **38***a* merely slip past each other and fail to make a driving connection. Moreover, the spacing of the teeth **38** are such that the rotary mechanism or member **22** has preselected positions of rotation including one position of rotation in which the auxiliary pump plunger **26** occupies an operative position in the path of pivotal movement of the trigger lateral projection **18** which occurs during pivotal movement of the trigger **18** about the pivot **18***a*.

Formed integrally on the driving gear **34** is a member **34***b* having an opening which, along one section, serves as a cam surface **34***c*. As best shown in FIG. 3, this cam surface **34***c* is engaged by the trigger lower projection **18***c* which functions as a cam. More particularly, one end **36***a* of the helical spring **36** is seated, as at **40**, in a shoulder formed in the housing **10***a* while the other spring end **36***b* is connected to and is movable with the cam member **34***b*. Thus, upon manipulation of the trigger **18**, the trigger cam projection **18***c* is effective, by camming engagement with the cam surface **34***c* in actuating the driving gear and member **34**, **34***b*, respectively, through rotation from its full line position into its phantom line position as illustrated in FIG. 3. As previously noted, this counterclockwise rotation of the driving gear **34** does not result in driving rotation of the driven gear **32**. When the trigger is released, however, the compression produced in the spring **36** by movement of the spring end **36***b* toward the member **34***b* unwinds the spring **36** and is effective to power the driven gear **32** in rotation and thus advance the rotary member **22** into its next successive position of rotation.

The pump **16**, as best illustrated in FIG. 4, includes a main pump plunger **16***a* biased by a spring **42** such that a bearing surface **16***b* at the base of the main pump plunger **16***a* physically abuts against the rotary mechanism **22**. Thus, when the auxiliary pump plunger **26** and the main pump plunger **16***a* are aligned with each other, as depicted in FIG. 4, manipulation of the trigger **18** is effective in actuating, via the aligned pistons **26** and **16***a*, the pump piston **24**. Actuation of the pump piston **24** results in the unseating of the ball valve **46** from the outlet valve **48**, the closing of the inlet valve **50** by the other ball valve **52**, and the ejection of water from the pump outlet opening **54**.

Upon the release of the trigger **18**, the spring **42** returns the piston **44** to its starting position, ball valves **46**, **52** resume their seated positions, and the water is again charged into the pump chamber **56**, all as is clearly illustrated in FIG. 5. To replenish the water supply, use is preferably made of a squeeze bottle B to introduce water into the pump **16** through an inlet opening **60** having a removable plug **58**.

What is claimed is:

1. A toy water pistol comprising a housing defining an internal chamber, a pump including a main pump plunger operatively arranged with said main pump plunger extending into said internal chamber, rotary means having plural positions of rotation journalled for rotation within said internal chamber adjacent said main pump plunger, an auxiliary pump plunger operatively arranged on said rotary means so as to align with said main pump plunger in at least one said position of rotation thereof preparatory to actuating said main pump plunger, and trigger means operatively arranged to rotate said rotary means through one position of rotation at a time and to operate said auxiliary pump plunger when in said one position of rotation effective to actuate said main pump plunger.

2. A toy water pistol as defined in claim **1** wherein said rotary means includes a disc having a peripheral edge extending through said housing and accessible for causing manual rotation of said rotary means to thereby contribute to the actuation of said main pump plunger on a random basis.

3. A toy water pistol as defined in claim **2** wherein said rotary means includes a driven gear and said trigger means a driving gear in meshing engagement with each other, said meshing teeth of said driven and driving gears having a circumferential spacing effective to provide said plural positions of rotation of said rotary means including said one position of rotation thereof wherein said auxiliary pump plunger is in alignment with said main pump plunger.

4. A toy water pistol comprising a housing defining an internal chamber, a pump including a main pump plunger operatively arranged with said main pump plunger extending into said internal chamber, rotary means having plural positions of rotation journalled for rotation within said internal chamber adjacent said main pump plunger, an auxiliary pump plunger operatively arranged on said rotary means so as to align with said main pump plunger in only one said position of rotation preparatory to actuating said main pump plunger, a trigger means on said housing, cooperating driving and driven gears in meshing engagement with each other operatively arranged on said trigger means and on said rotary means to power said rotary means in rotation, said driving and driven gears having a cooperating cam surface and camming member arranged thereon to provide rotation of said rotary means one position of rotation at a time, said trigger means being operatively arranged to cause said auxiliary pump plunger in said one position of rotation thereof to actuate said main pump plunger.

5. A toy water pistol as defined in claim **4** wherein said rotary means includes a disc having a peripheral edge extending through said housing and accessible for causing manual rotation of said rotary means to thereby contribute to the actuation of said main pump plunger on a random basis.

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WALTER SOBIN, *Primary Examiner.*

U.S. Cl. X.R.

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