

Safe Air/Water Rocket launching system

Description

BACKGROUND

Compressed air with water rockets have been used as a fun and educational tool for adults and especially children. However, launching this type of rockets can be dangerous when the rocket lands on people or when it misfires without triggering.

SUMMARY OF THE INVENTION

Our present invention makes this well loved rocket launching system safe from operating dangers and even enhances the performance which can add more educational value.

A safe air/water rocket launching system, comprising: a rocket; a manual air pump connected to the rocket filled with water via a pressure pipe and configured to enable a user to pump air into said rocket to increase air pressure; a quick release trigger mechanism connected to the said rocket and configured, when released, will release high air pressure stored in rocket to the surroundings to launch the rocket. It will be mounted on a launching pad. The air pressure creates a pressure source that is both safe and sufficient to propel the rocket into the air. The rocket will be fitted with a safety cone so minimise the impact upon landing.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the preferred embodiment of safe air/water rocket launching system hereof shown with a rocket attached and with the pressure tube of the air pump;

FIG. 2 is a side view of the safe/air water rocket launching system with the legs of the tripod extended;

FIG. 3 is an enlarged side view showing the 2-bottle rocket;

FIG. 4 is an enlarged side view showing the 3-bottle rocket;

FIG. 5 is an enlarged side view showing the 2-bottle rocket with the safety cone in safety-mode;

FIG. 6 is an enlarged side view showing the 3-bottle rocket with the safety cone in safety-mode;

FIG. 7 is an enlarged view showing the U-shaped guiding rod.

FIG. 8 is an enlarged partial vertical cross section view showing the nozzle and quick release mechanism.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, and particularly to FIG. 1 and FIG. 2, a preferred embodiment of the safe/air water rocket launcher system of the present invention is shown and generally designated by the reference numeral 23. In FIG. 3 and FIG. 5, the rockets are constructed from 2 polyethylene terephthalate (PET) bottles. 1 polyethylene terephthalate (PET) bottle will be cut out to form dummy vessel 18 and rear skirt 5 and the other will be uncut to be used as the pressure vessel 19. In FIG. 4 and FIG. 6, the rockets are constructed from 3 polyethylene terephthalate (PET) bottles. 1 polyethylene terephthalate (PET) bottle will be cut out to form dummy vessel 20, 1 polyethylene terephthalate (PET) bottle will be cut to form the rear skirt 5 and the third polyethylene terephthalate (PET) bottle will be uncut to be used as the pressure vessel 19. The various forms of the rockets are generally designated by the reference numeral 24. The rocket 24 of the present invention, which is safe and easy to use and can be launched into the air. The rocket 24 has a main cylindrical body and generally designated by the reference numeral 2. Main cylindrical body 2 has a rear skirt 5 and at least three fins 3 attached by mounting means to the outer cylindrical surface at the bottom end of the main cylindrical body 2 and equally spaced around the circumference of the body. A reversible and collapsible safety cone 1 is attached by mounting means to the outer cylindrical surface at the top of the main cylindrical body 2. The reversible and collapsible safety cone 1 is made to be very soft and so helps to absorb the impact of the landing rocket. Reversible and collapsible safety cone in-safety-mode 22 has been reversed inside out to form a dimple at the tip to further increase surface area upon impact to further reduce the risk of the injuries due to landing rocket 24. In an event of launching the rocket 24 most of the time, it will be filled partially with water. At the polyethylene terephthalate (PET) bottle opening screw thread 25 of the pressure vessel 19, a nozzle 4 will be screwed on tightly. The nozzle 4 will be then lodged into the quick release mechanism 6. The rubber O-ring 26 on the nozzle 4 is to prevent air and water leakage from the nozzle 4 when it is lodged into quick release mechanism 6. The quick release mechanism 6 will be secured to the stainless steel bracket 7 by the means of a bottom fastener 27. Further precaution has been in place to prevent air and water leakage using an inner shield 28 at the connecting part between the pressure pipe 12 and the quick release mechanism 6. The weight of the rocket 24 will be supported by the stainless steel bracket 7 and the U-shaped guiding rod 8 will allow it to steady its trajectory at the beginning of the launch. The part connecting both sides U-shaped guiding rod 21 is curved so fit the curvature of the main cylindrical body 2. The stainless steel bracket 7 will be attached to the tripod with a bracket connector 9. The launch angle can be adjusted via a vertical angle adjusting mechanism 10. The height of the launch can change from the normal length of the legs of the tripod 11 in FIG. 1 to an extended length 17 in the way legs of the camera tripod extends its legs in FIG. 2. The air pressure inside the rocket 24 can be checked from the safety pressure gauge 15 on the manual air pump 14. The manual air pump 14 is connected to the quick release mechanism 6 via a pressure pipe 12. One can attain the desired pressure by holding on to the handle 13 and pulling it up and pushing down with feet on either side of the leg stand 16. Once the desired pressure is attained, one can launch the rocket 24 by triggering the quick release mechanism 6. The rocket 24 will then be launched immediately. The launching force is the reaction force caused by the force of the water ejecting out from the nozzle 4. Upon landing, the impact of the descent of the rocket 24 will then be absorbed by the reversible and collapsible safety cone 1 or reversible and collapsible safety cone in-safety-mode 22.

Claims

I claim:

1. A safe air/water rocket launching system, comprising: a rocket; a manual air pump connected to the rocket filled with water and configured to enable a user to pump air into said rocket to increase air pressure; a quick release trigger mechanism connected to the said rocket and configured, when released, will release high air pressure stored in said rocket to the surroundings to launch the rocket; a launching pad.
2. The safe air/water rocket launching system as claimed in claim 1, wherein said quick release trigger mechanism is mechanically controlled.
3. The safe air/water rocket launching system as claimed in claim 1, wherein the rocket comprises a main cylindrical body; reversible and collapsible safety cone mounted on the first end of the main cylindrical body; a rear skirt mounted on the second end of the main cylindrical body; a plurality of fins mounted on the rear skirt; and a nozzle mounted on the second end of the main cylindrical body.
4. The safe air/water rocket launching system as claimed in claim 3, wherein the reversible and collapsible safety cone can absorb the impact upon landing.
5. The safe air/water rocket launching system as claimed in claim 4, wherein the reversible and collapsible safety cone can be reversed inside-out to create a dimple on top of the cone so to further enhance safety.
6. The safe air/water rocket launching system as claimed in claim 3, wherein the main cylindrical body is made of a plurality of polyethylene terephthalate (PET) bottles.
7. The safe air/water rocket launching system as claimed in claim 1, wherein the manual air pump comprises a safety pressure gauge.
8. The safe air/water rocket launching system as claimed in claim 1, wherein the launching pad comprises a tripod, stainless steel bracket, vertical angle adjusting mechanism and a U-shaped guiding rod.
9. The safe air/water rocket launching system as claimed in claim 3, wherein the nozzle is screwed on at the rocket's opening, wherein will release the high pressure stored in said rocket to the surroundings to launch the said rocket.
10. The safe air/water rocket launching system as claimed in claim 3, wherein the nozzle has an inner wall formed with an inner thread screwed on the threaded connector of the main cylindrical body, so that the nozzle is secured on the threaded connector of the main

cylindrical body.

11. The safe air/water rocket launching system as claimed in claim 3, wherein the nozzle comprises a safety mechanism.

12. The safe air/water rocket launching system as claimed in claim 11, wherein said safety mechanism will cause a leak when pressure exceeds 5 atmospheric bars.

13. The safe air/water rocket launching system as claimed in claim 8, wherein the tripod can adjust vertical angle and height of launching to hit targets at different locations.

14. The safe air/water rocket launching system as claimed in claim 3, wherein the system is configured such that, where the main cylindrical body contains water and air that has been pressurized by manual air pump, and when the quick release mechanism is triggered, the rocket is launched by reaction force caused by the force of the water ejected from the nozzle.

15. The safe air/water rocket launching system as claimed in claim 3, wherein the rear skirt is a hollow polyethylene terephthalate (PET) ring cut out from polyethylene terephthalate (PET) bottle.