

Sept. 20, 1971

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3,605,326

STRING PROJECTING TOY

Filed Jan. 30, 1969

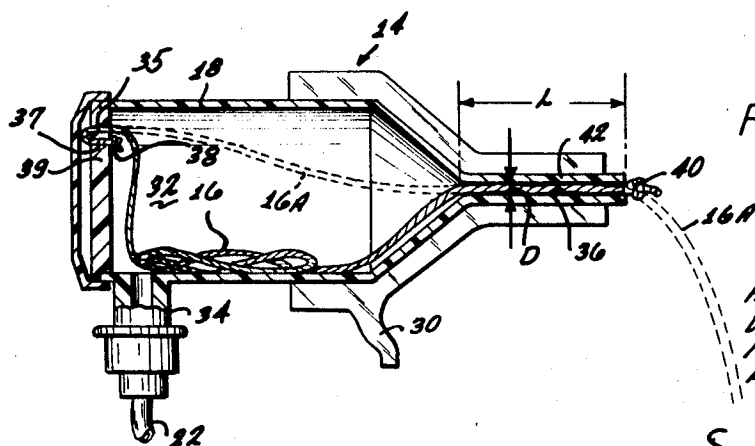
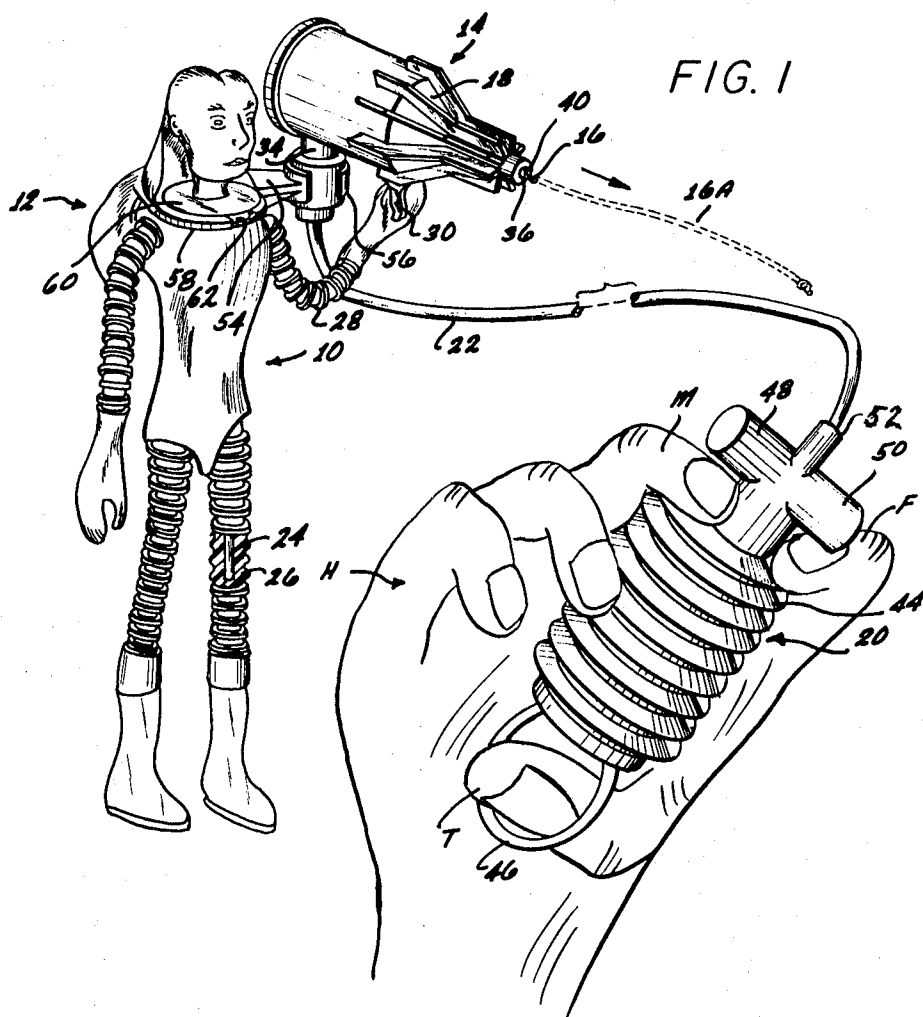


FIG. 2

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STRING PROJECTING TOY

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Filed Jan. 30, 1969, Ser. No. 795,224

Int. Cl. A63h 29/16

U.S. Cl. 46—44

8 Claims

ABSTRACT OF THE DISCLOSURE

A spaceman toy comprising a spaceman figure and a pneumatically powered space probe or gun mounted on him, which projects and retracts a string. The gun includes a chamber with a long narrow passageway through which the string extends, and a hand pump is coupled by a tube to the chamber to apply compressed air or a vacuum to the chamber to project or retract the string.

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to toys and more particularly to a novel action toy.

Description of the prior art

The entertainment value of space toys is largely based on their novelty of form and action to represent strange or high technology apparatus appropriate to a space environment. In the case of vehicles, guns, probes, and other apparatus which are designed for operation by a spaceman figure, it is desirable that the manipulation be performable from a distance, to aid in the illusion that the toy figure is performing the manipulation of high technology apparatus.

OBJECTS AND SUMMARY OF THE INVENTION

An object of the present invention is to provide a novel, remotely operated, action toy.

Another object is to provide a spaceman figure, and an action toy which appears to be operated by the figure.

In accordance with the present invention, a toy is provided which rapidly projects and retracts a long string-like member. The toy includes a shooting chamber with a small hole in it and a string that projects partially through the hole. A pump is connected by a tube to the chamber, the pump being constructed so it can be forcefully collapsed and expanded by a child. When the pump is collapsed, an air pulse moves through the tube into the shooting chamber, and out of the small hole to rapidly drag out the string until it extends most of the way out of the shooting chamber. When the pump is expanded, it sucks in air, which enters through the small hole in the shooting chamber to quickly drag the string back into the chamber.

In one embodiment of the invention, a string-shooting and retracting space gun toy is provided which mounts on the back of a spaceman figure. The figure has flexible arms, and one of them can be raised to simulate operation of the space gun. A long tube which connects a pump to the space gun allows a child to operate the gun from a position remote from it, so that it appears as though the raised hand of the spaceman figure is operating the gun.

The novel features of the invention are set forth with particularity in the appended claims. The invention will be best understood by the following description when read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an action toy constructed in accordance with the invention; and

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FIG. 2 is a partial sectional view of the gun in the action toy of FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 illustrates a spaceman toy comprising a spaceman figure 10 with a carrier 12 mounted on its back, and a probe or gun 14 mounted on the carrier. The gun 14 has a string-like projectile or projecting member 16 that can be rapidly projected almost completely out of a gun housing 18 to the position 16A, and then can be rapidly withdrawn back into the housing. The gun is pneumatically powered. A hand-operated pump 20, which is connected to the gun housing by a long tube 22, can be operated by the hand H of a child, to cause projection and retraction of the string-like projectile member.

The spaceman figure 10, which may represent an alien being, comprises a soft wire armature 24 covered with a soft flexible plastic covering 26. This construction allows the figure to be posed, and in particular, one of the arms 28 can be raised to the gun 14 to simulate operation of the gun by the figure. The gun housing 18 has a simulated trigger member 30. When the carrier 12 and gun housing 18 are supported on the figure, as shown, the figure's arm 28 may be raised to the trigger 30 to provide the appearance that the figure is ready to fire the gun. Actual control of gun operation is by the child by his operation of the hand pump 20. However, the long length of tube 22, which may be constructed of a transparent material to make it less noticeable, allows remote control of the gun. Thus, it largely appears that the spaceman figure is operating the gun, to add to the realism of the toy.

As shown in FIG. 2, the gun housing 18 includes a chamber 32 with a nipple 34, the nipple 34 being coupled to the tube 22 that connects to the hand pump. When the hand pump is collapsed, a pulse of air enters the chamber 32 and exits through an aperture 36. The string-like member 16 also extends through the aperture 36, and the exiting air drags the string member with it to rapidly project the member out of the gun housing. An inner end of the string extends through holes 35 and 37 in an end plug 39, and has a knot 38 to prevent complete expulsion of the string. The hole 35 where the string enters the plug is offset from the axis of the aperture 36, and is positioned above the aperture. Another knot 40 on the outer end of the string prevents its complete return into the gun housing. After ejection of the string, the hand pump 20 is expanded, to create a strong vacuum in the gun housing 18. The air entering through the aperture 36 drags the string 16 back into the gun chamber.

The operation of the gun in projecting the string-like projectile member is somewhat similar to the operation of a toy described in Pat. No. 3,309,082 by Hindman entitled Strip Projecting Squeeze Toy wherein a container that looks like a mustard bottle can be squeezed to eject a yellow string that looks like mustard. In the toy of that invention, the string is stuffed or poked back into the container after each ejection. While the toy probe gun 14 ejects a string-like projectile member as does the toy of the foregoing patent, the apparatus of the present invention also enables rapid retraction of the projectile, and allows operation from a remote location.

In order to facilitate movement of the string member 16 through the aperture 36, the walls 42 of the aperture are constructed to form a passageway of substantially constant diameter, with a length L at least twice as great as the diameter D, and preferably at least 4 times as great. The diameter D is slightly greater than the diameter of the string-like projectile member. The long length of the passageway results in a large area of the projectile member surface being subjected to the dragging forces that tend to drag the member along the passageway. This

allows a greater total force to be applied to the projectile member to rapidly push it out and retract it back in.

The attachment of the inner end of the string to the plug 39 not only prevents complete expulsion of the string, but also prevents the formation of knots in the string, which might occur if the inner end were merely knotted but unattached to the structure. The offsetting of the hole 35 where the inner end of the string enters the plug, assures a bow in the string between hole 35 and aperture 36 even when the string is fully expelled. This bow helps to start the string back into the chamber by eliminating a "column effect." For example, if the hole 35 were not offset, the string would be straight like a stiff column, which would have to be collapsed at the beginning of string retraction, thereby hampering the crucial start of retraction. The placement of hole 35 higher than the level of aperture 36 for the normal use position of the gun wherein the axis of aperture 36 is substantially horizontal, can aid retraction somewhat by reason of the weight of the string within the chamber which tends to fall down and drag in the rest of the string. However, even if the hole 35 is below the level of hole 36, a bow will exist which tends to drag in the rest of the string.

The hand pump 20 shown in FIG. 1 is designed to enable the application of both high pressures and high vacuums to the gun chamber 18 through the connecting tube 22. The pump is constructed of an elastic plastic material, including a hollow multi-diaphragm portion 44 with a ring 46 at one end and a pair of guards 48, 50 at the other end. The multi-diaphragm portion is connected through a hollow portion of the guards to a nipple 52 that is connected to the tube 22.

As shown in the drawing, the pump is adapted to be held by the hand H, with a thumb T engaged in the ring 46 and the middle and forefingers M and F positioned between the guards 48, 50 and an end of the multi-diaphragm portion 44. When the thumb T is moved toward the middle and forefingers M, F, the multi-diaphragm portion is collapsed and an air pulse passes through the tube 22 to the gun chamber 18. The air pulse moves air out of the gun chamber passageway or aperture 36, and rapidly drags the string projectile member 16 out of the gun so it flies forward in almost a straight line. A hard squeezing action will project the string projectile in a straight line even if it is directed straight up (of course it then falls down).

The child can then forcefully expand the multi-diaphragm portion 44 by separating his thumb T and his middle and forefingers M, F. The pair of guards 48, 50 that are spaced from the nearest end of the multi-diaphragm portion so as to receive the fingers, and the ring 46, enable large expanding forces to be applied to the pump. This allows a much higher vacuum to be established than can be obtained by relying only on the elasticity of the pump material to return the multi-diaphragm portion to its original expanded state. The rapid expansion results in the creation of a vacuum or partial pressure in the pump, which is transmitted through the tube 22 to the gun chamber 18. Accordingly, air rushes into the gun chamber through the passageway 36, carrying the string projectile member 16 with it. The projectile member moves in until the knotted end 40 reaches the outer end of the passageway.

It is generally found that the retraction of the string projectile is harder than its ejection. However, the great length L, of the passageway allows substantial retracting forces to be applied to the string as air rushes back in through the passageway. This often allows the string to be retracted by the vacuum resulting from the elastic expansion of the pump to its original uncompressed state. However, in some cases, the string cannot be retracted by this degree of vacuum, and a stronger vacuum can be created by forcefully expanding the pump in the manner described above. It is found that this always causes full

retraction of the string, unless it becomes caught on an object.

The entertainment value of the toy is largely due to the remote operation of the gun, which increases the appearance of operation by the spaceman figure 10. Such remote operation is, of course, realized by the use of the long flexible connecting tube 22 to pneumatically couple the gun chamber 18 to the pump 20 which serves as a source of both high and partial pressure pulses. The long flexible tube 22 enables vigorous hand movements to be applied to the pump without changing the orientation of the gun. This facilitates aiming of the gun, so the child can try to hit a particular target with a string projectile, yet allows a high-speed ejection of the projectile to occur accurately in the desired direction.

In order to enable mounting of the gun 14 on the carrier 12, the carrier is provided with a bracket 54 having an annular retainer 56 thereon. The nipple 34 is received in the retainer, the retainer being flexible enough to open slightly to receive the nipple and then close tightly on it. In order to enable the carrier 12 to be held on the spaceman figure 10, the carrier is provided with a ring holder 58 that is received on a collar portion 60 of the figure. The collar portion includes a ledge 62 for limiting downward movement of the ring. The ring holder 58 can be lifted over the head of the figure to remove the carrier, so the spaceman figure can be played with apart from the carrier.

Although particular embodiments of the invention have been described and illustrated herein, it is recognized that modifications and variations may readily occur to those skilled in the art, and consequently, it is intended that the claims be interpreted to cover such modifications and equivalents.

What is claimed is:

1. An action toy comprising:

means defining a chamber with a passageway opening therein, said passageway opening having a length at least twice its diameter;

elongated projecting means extending through said passageway opening for sliding through it to move between a first position wherein substantially all of said projecting means is hidden from view relative to the exterior of said chamber and a second position wherein a substantial portion of said projecting means extends from said chamber;

manually operable means for compressing air in said chamber, whereby to move out said projecting means with the stream of air flowing out through said passageway opening;

a figure having posable arms;

carrier means mounted on said figure;

said chamber being mounted on said carrier means, to permit raising of said figure arms to said chamber for simulating operation by said figure; and

said manually operable means comprising a hand pump and a long flexible tube connecting said pump to said chamber to enable remote operation whereby to heighten the appearance of operation by said figure.

2. The action toy described in claim 1 wherein:

said manually operable means is constructed to create a partial vacuum within said chamber to a degree dependent upon the manual operating forces applied thereto, whereby to create a strong influx of air that moves said projecting means back into said chamber means.

3. The action toy described in claim 1 wherein:

said manually operable means comprises a container constructed of flexible walls to permit collapse and expansion, and manually engageable means mounted at opposite ends of said container to receive forces for pulling them apart to forcefully expand said container, whereby to permit a relatively high vacuum to be created in said chamber to suck back said projecting means.

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4. The action toy described in claim 1 wherein:
said manually operable means comprises a multi-dia-
phragm member with a ring at one end and a pair
of guards at an opposite end, for receiving said mem-
ber between the thumb at one end and the middle 5
and forefingers at the opposite end to apply com-
pressing and expanding forces thereto.
5. An action toy comprising:
means defining a chamber with an opening;
an elongated flexible member extending through said 10
opening for sliding therealong between a first posi-
tion wherein most of said member is hidden from
view and a second position wherein a substantial
portion of said member extends out of said chamber;
and 15
means for compressing air in said chamber to move out
said member;
said member having an inner end fixed to a wall of
said chamber, whereby to prevent unwanted knot-
ting of said member; 20
said opening in said chamber having an axis; and
said inner end of said member being fixed to said wall
of said chamber at a location offset from the axis of
said opening, whereby to obviate a stiff column effect
in said member when it is first retracted back into 25
said chamber.
6. The action toy described in claim 5 wherein:
said chamber has a use position wherein the axis of
said opening is normally substantially horizontal; and
said location where said inner end of said member is 30
held to the walls of said chamber is higher than the
level of said opening, whereby to create a bowed
portion of said member within said chamber that
tends to drag it back in.

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7. An action toy comprising:
a figure with posable arms;
a gun chamber mounted on said figure to enable said
arms to be posed thereon for simulated operation
thereof, said chamber having an opening;
an elongated member disposed in said opening for move-
ment through it along with the movement of air
through said opening;
a hand pump for applying pressure pulses; and
a flexible tube coupling said pump to said gun chamber,
whereby to enable remote operation of said gun
while simulating operation by said figure.
8. The action toy described in claim 7 wherein:
said hand pump includes means for receiving manual
forces to create a vacuum in said gun chamber that
retracts said elongated member, whereby to enable
remote retraction of said member.

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U.S. Cl. X.R.

46—116, 145; 124—11; 272—8N