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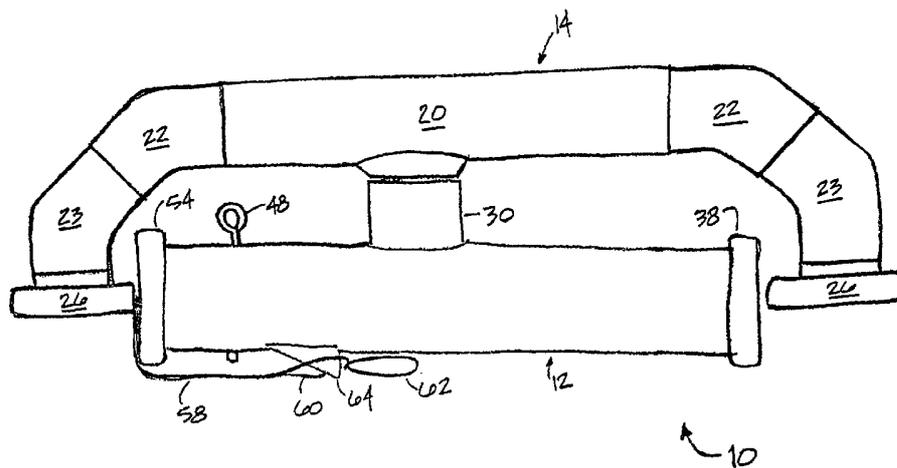
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(54) Title: MULTI-PURPOSE WAR GAME DEVICE



(57) Abstract: The present invention reveals a reusable war game device that launches paint-balls or liquid colorant or both simultaneously, can be aimed and fired by the user while hand-held, can be concealed and aimed but remotely triggered, is easy to dismantle and repair under field conditions, is durable enough to withstand all field conditions, and is concealable, compact and easily portable. To accomplish its purpose, the device comprises a launch housing that includes a launch barrel joined to a rotatable muzzle assembly that is fixed on a target; a chamber housing that includes a charge chamber which receives and stores a charge; a hammer chamber that includes a retractable hammer that when released from a cocked position is thrust toward said charge chamber; a trigger that is drawn to retract said hammer to said cocked position; and, a check valve located between said launch barrel and said charge chamber that permits flow only from said charge chamber to said launch housing.



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MULTI-PURPOSE WAR GAME DEVICE

TECHNICAL FIELD

The present invention relates generally to small
10 simulated weapons, used in the course of military training exercises
or recreational war games, that discharge solid or liquid projectiles.

BACKGROUND ART

The military has long engaged in simulated war games as
15 a method of training personnel in the arts of weaponry and combat.
More recently, non-military personnel have been engaged in
simulated war games as a form of recreation. Whether military or
non-military, those engaged in such games use weapons that launch
benign colorant projectiles as a means of identifying another whom
20 has been 'hit' and is therefore eliminated from the game.

Colorant projectiles are available in the form of paint-
balls that may be fired from various spring-loaded or compressed-gas
charged devices. Colorant projectiles are also available in liquid
form. Presently, it is known to fire paint-balls from devices that
25 resemble pistols, rifles, hand grenades and land mines. It is also
known to launch liquid colorant from devices that resemble hand
grenades and land mines.

Beyond hand-held pistols and rifles that fire single paint-
balls in succession, attempts have been made to develop simulated
30 war game weapons that provide the user with a tactical advantage.
For example, it is known to provide reusable compressed-gas charged

5 grenades that can simultaneously launch many paint-balls at an adversary in an effort to simulate the fragmentation of an exploding hand grenade. Also, it is known to provide a reusable compressed-gas charged land mine that simultaneously launches groups of paint-balls in a 360° radius. In addition, it is known to provide a reusable
10 compressed-gas charged land mine that sprays liquid colorant in a 360° radius upon being tripped by a war game participant.

The primary thrust of the known prior art devices is to provide specialized, single function weapons that discharge either solid or liquid colorant projectiles. Because of their specialized
15 nature the existing devices do not offer the user a choice between launching only paint-balls, launching only liquid colorant, or launching both simultaneously. Nor do the known existing devices offer the user a choice between safely holding and firing the device, or concealing the device like a land mine that is aimed to launch
20 colorant projectiles only at the anticipated adversary. Finally, many of the known prior art devices are not concealable nor is it easy to carry many simultaneously.

Thus, there is a need in the art for a reuseable war game device that launches paint-balls or liquid colorant or both
25 simultaneously, can be aimed and fired by the user while hand-held, can be concealed and aimed but remotely triggered, is easy and inexpensive to manufacture, is easy and inexpensive to charge, is easy to dismantle and repair under field conditions, is durable enough to withstand all field conditions, is concealable, is compact, and is easily
30 portable.

5 SUMMARY OF THE INVENTION

The present invention overcomes the deficiencies of the known prior art devices by providing a reusable war game device that launches paint-balls or liquid colorant or both simultaneously, can be aimed and fired by the user while hand-held, can be concealed and aimed but remotely triggered, is easy to dismantle and repair under field conditions, is durable enough to withstand all field conditions, and is concealable, compact and easily portable.

Generally speaking the weapon is divided into two main sections, a chambers housing and a launch housing. The launch housing includes a launch barrel connected at both ends by elbows. These elbows are rotatable 360° about a longitudinal axis. Connected to each first elbow is a second elbow. Each second elbow is rotatable 360° about a second longitudinal axis.

Together, the launch barrel and elbows store the projectiles. Projectiles exit the weapon via the launch ports, the open end of the second elbows. The launch ports are aimed by rotating both the first and second elbows, about the respective axes, toward the target. This combination of multiple elbows provides any firing alignment desired by the user.

Covering each launch port is a removable end cap. During storage and transportation each end cap remains in place.

The housings are removably connected. The connection between the housings includes a check valve. The check valve permits flow only from the chambers housing to the launch housing. In this regard, the check valve prohibits liquid projectile from migrating to the chambers housing.

5 The chamber housing comprises two distinct chambers. The charge chamber contains the power or charge that launches the projectiles. The hammer chamber contains a hammer assembly, namely a hammer, hammer spring, trigger and safety pin.

 To safely fire the weapon while hand-held, the user
10 draws back the trigger by pulling the hold portion and then securing the retainer portion about the retainer seat. The action of drawing back the trigger compresses the hammer spring. The user then inserts the safety pin. Next the elbows are rotated so that the launch ports point toward the target(s) and the end caps are removed. The user
15 then releases the retainer from the retainer seat. All that is necessary to fire the weapon and launch the projectiles is to aim and remove the safety pin.

 Alternately, to safely fire the weapon while hand-held, the user rotates the elbows toward the target(s), removes the end caps,
20 aims the weapon, draws back the trigger so that the hammer spring is sufficiently compressed and then releases the trigger.

 To set the weapon so that it may be triggered by an adversary to fire upon that adversary, such as when the trigger is released by a trip wire, the user plants or otherwise secures the
25 weapon to a surface. The user then draws back the trigger and secures the retainer about the seat. The user inserts the safety pin to secure the hammer in the cocked position, rotates the elbows so that the launch ports aim at the anticipated target(s) and removes the end caps. The user sets a remote trigger such as a trip wire that will cause
30 the retainer to release from the seat. The user then removes the safety

5 pin and all that is necessary to fire the weapon and launch projectiles is to have the trip wire engage.

Whether the weapon is fired while hand-held or set and tripped by another, the projectiles exit the launch port through the same sequence of events. When the hammer is released from the
10 cocked position the hammer spring uncoils, throwing the hammer toward the container. The pointed ram hits and ruptures the thin seal at the top of the container causing the compressed-gas to violently escape in the usual manner. The escaping gas pushes open the check
15 valve and passes into the launch barrel. The forces exerted by the gas push the projectiles at rapid speed out the launch ports and toward their intended target(s).

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a top view of a war game device according to one embodiment of the present invention, shown in a folded and
20 secured position.

Figure 2 is a side view of a war game device according to one embodiment of the present invention, shown in a folded and secured position.

Figure 3 is a longitudinal cross-section view of a war
25 game device according to one embodiment of the present invention with the chambers housing shown in cross section and representative projectiles illustrated by dashed line for solids and wavy lines for liquids.

5

DETAILED DESCRIPTION

Referring now to the drawings, wherein like numerals refer to like parts throughout the several views, Fig. 1 shows a top view of a war game weapon **10** embodying the present invention. In
10 Fig. 1 the weapon **10** is illustrated in the folded configuration as it would be for safe storage or carrying. Fig. 2 shows a side view of the weapon **10** also in the folded configuration.

Generally speaking the weapon **10** is divided into two main sections, the chambers housing **12** and the launch housing **14**.
15 As explained below in detail, the housing **12** contains the trigger, firing assembly and charge while the housing **14** contains the colorant projectiles. War game weapons launch benign colorant projectiles as a means of identifying another whom has been 'hit' and is therefore eliminated from the game.

20 As best illustrated in Fig. 3, the launch housing **14** comprises a number of parts. In the illustrated embodiment, the launch barrel **20** is a generally straight portion which is connected at both ends to two separate muzzle assemblies. Embodiments with fewer or more muzzle assemblies are contemplated. Here, a muzzle
25 assembly is comprised of two 45° elbows **22**, **23**. The elbows **22** are joined to the launch barrel **20** such that the elbows **22** are rotatable 360° about the longitudinal axis A. Connected to each elbow **22**, at the end opposite the connection to the launch barrel **20**, is a second elbow **23**. Each elbow **23** is joined to a respective elbow **22** such that
30 the elbows **23** are, in one embodiment, rotatable 360° about the

5 longitudinal axis B. However, embodiments allowing less than 360° rotation are contemplated.

The launch barrel/elbow and elbow/elbow connections are formed, as known by those skilled in the art, to provide an easy disconnect while maintaining a pressure resistant liquid tight seal. In the illustrated embodiment, friction-fit bell and spigot joint ends form these connections. The combination of multiple elbows **22**, **23** provides any firing alignment desired by the user.

Together, the launch barrel **20** and elbows **22**, **23** form a combination hold/launch barrel that stores the projectiles **24**. As noted above, both military training exercises and recreational war games use non-lethal colorants as projectiles to mark 'hits'. Paintballs and liquid are two popular forms of colorant projectiles. For the purposes of this description, all forms of non-lethal colorant projectiles are referred to as projectiles **24**. Nevertheless, while this description is directed to non-lethal projectiles, it will be understood that the term projectile extends to include injury-inflicting lethal projectiles.

Each elbow **23** is configured, at the end opposite the connection to the elbow **22**, to securely engage an end cap **26**. In the illustrated embodiment, the elbow **23** and end cap **26** are both threaded to mate and provide a pressure resistant liquid tight seal. During storage and transportation each end cap **26** is connected to a respective elbow **23**. In this manner the projectiles **24** are contained, even in the event a cocked weapon is inadvertently discharged. As explained below in greater detail, projectiles **24** exit the weapon **10**

5 via launch ports **28**. The launch ports **28** are aimed, as explained above, by rotating elbows **22**, **23** about the respective axes A, B.

The launch housing **14** and chambers housing **12** are joined together using methods well known to those skilled in the art. For example, in the illustrated embodiment the housings **12**, **14** are
10 mated with threaded connections. Because the weapon **10** is easily disassembled, maintenance and replacement is accomplished quickly and efficiently.

In this embodiment, the launch housing **14** and chambers housings **12** are connected via an outside threaded nipple **29** attached
15 to the launch housing **14**, that mates with an inside threaded bushing **30** attached to the chambers housing **12**. Like the connections described above, this connection is also configured to provide a pressure resistant liquid tight seal.

The connection between the launch housing **14** and
20 chambers housing **12** includes a check valve **31**. As explained in detail below, the check valve **31** preferably only permits flow F from the chambers housing **12** to the launch housing **14**. In this regard, the check valve **31** prohibits liquid projectile **24** from migrating to the chambers housing **12**.

25 The chamber housing **12** comprises two distinct chambers. The charge chamber **32** contains the power or charge that launches the projectiles **24**. In this embodiment, the charge is compressed-gas in the well known CO² container **34**. The typical CO² container is cylindrical, includes a rounded bottom and is of
30 uniform diameter except at the top where the container tapers to a small neck and top. The container **34** is inserted into the chamber **32**.

5 To secure the container 34 the chamber 32 includes support shoulders 36. The container 34 is nested against the shoulders 36 and retained within the chamber 32 by the end cap 38. In this embodiment, the housing 12 is threaded to mate with the end cap 38 which is likewise threaded.

10 The hammer chamber 40 contains a hammer assembly comprising a hammer 42 and the associated spring-loaded trigger mechanism. The hammer 42 includes a safety pin receiver 44 and ram 46. In this embodiment, the hammer 42 is shaped like an hour-glass with a pointed end. Here the area of narrowest dimension is the
15 safety pin receiver 44 and the pointed end is the ram 46. In Fig. 3 the hammer 42 is shown in the uncocked position. That is, the hammer 44 is loose and not poised to rupture the container 34 causing the compressed-gas contents to discharge.

In the cocked position (not illustrated), the hammer 42 is
20 drawn back and held within the hammer chamber 40 at the end opposite the location illustrated in Fig. 3. In the cocked position the safety pin 48 is engaged by inserting it into a first safety pin orifice 50 so that it extends across the safety pin receiver 44 and through a second safety pin orifice 50. When engaged in this manner, the safety
25 pin will securely hold the hammer 42 in place.

In the cocked position, the hammer spring 52 is compressed between the hammer 42 and the hammer chamber end cap 54. Like the charge chamber end cap 38, the end cap 54 is also threaded to mate with the threaded end of chamber housing 12. The
30 hammer chamber end cap 54 includes a trigger orifice 56 which permits passage of the trigger 58.

5 The orifices **50**, **56** as illustrated are configured to function as safety valves that permit compressed-gas to escape in the event of an unintentional discharge. In an alternative embodiment, the orifices **50**, **56** may be sealed to prevent the entry of debris, moisture and ambient air. Such an alternative embodiment may
10 include a separate safety valve.

In this embodiment, the trigger **58** is a flexible member surrounded partially by the hammer spring **52** and attached to the hammer **42**. At a distal end the trigger **58** includes a retainer portion **60** and a hold portion **62**. When cocked, the trigger **58** is held in the
15 cocked position by securing the retainer portion **60** around the retainer seat **64** as best shown in Figs. 1 and 2.

Operation

Generally, as best shown in Figs. 1 and 2, the weapon **10**
20 may be stored or transported with the charge container **34** and projectiles **24** in place by leaving the hammer **42** in the uncocked position. In other words, the weapon **10** may be stored or carried with the safety pin **48** in place and the retainer **60** over the seat **64** but without the hammer spring **52** being compressed. Generally, to
25 launch the projectiles **24**, the user may handhold and fire the weapon **10** or conceal and set the weapon **10** to be tripped by others.

As best described with reference to Fig. 3, to fire the weapon **10** while hand-held, the user grasps the chambers housing **12** generally around that section which houses the container **34**. The
30 user then draws back the trigger **58** by pulling the hold portion **62** and securing the retainer portion **60** about the retainer seat **64**. The action

5 of drawing back the trigger **58** retracts the hammer **42** and
compresses the hammer spring **52**. The hammer spring **52** is now
fully compressed and the hammer **42** is in the cocked position. The
user then inserts the safety pin **48**, as described above, to secure the
hammer **42** in the cocked position. Next the elbows **22**, **23** are rotated
10 so that the launch ports **28** point toward the target(s), and the end caps
26 removed. The user then releases the retainer **60** from the retainer
seat **64**. At this time, all that is necessary to fire the weapon **10** and
launch the projectiles **24** is to aim and remove the safety pin **48** from
the engaged position.

15 Alternately, to fire the weapon **10** and launch projectiles
24 while the weapon is hand-held, the user grasps the chambers
housing **12**, rotates the elbows **22**, **23** toward the target(s), removes
the end caps **26**, aims the weapon **10**, draws back the trigger **58** so
that the hammer spring **52** is sufficiently compressed and then
20 releases the trigger **58**.

To set the weapon **10** so that it may be triggered by an
adversary to fire upon that adversary, such as when the trigger **58** is
released by an engaged trip wire **66** (not shown), the user plants or
otherwise secures the weapon **10** to a surface (not shown). Suitable
25 horizontal surfaces, by way of illustration and not limitation, include
earthen ground, fallen trees, finished and unfinished exterior paths,
and the interior floors and ceilings of a structure. Suitable vertical
surfaces include trees, the exterior of structures, and the interior walls
of structures, just to name a few examples.

30 To set the planted weapon **10**, the user secures it to the
surface by fastening around the chambers housing **12**, threaded

5 bushing **30**, or launch barrel **20**. In an alternative embodiment, mounts may be provided for receiving fasteners that permit connecting to a surface. The user draws back the trigger **58** by pulling the hold portion **62** and securing the retainer **60** about the seat **64**. The hammer spring **52** is now fully compressed and the hammer **42** is in the cocked position. The user then inserts the safety pin **48**, as described above, to secure the hammer **42** in the cocked position. Next the elbows **22**, **23** are rotated so that the launch ports **28** aim at the anticipated target(s), and the end caps **26** removed.

The user sets a remote trigger such as a trip wire **66** (not shown) which, when engaged, will cause the retainer **60** to release from the seat **64**. The user then removes the safety pin **48** from the engaged position. All that is necessary to fire the weapon **10** and launch projectiles **24** is to have the trip wire **66** engage.

Alternatively, the user does not secure the retainer **60** about the seat **64** but inserts the safety pin **48** which is then connected to a trip wire **66**. All that is necessary to fire the weapon **10** and launch the projectiles **24** is to have the trip wire **66** engage.

The illustrated embodiment includes a trip wire **66**. However, it is considered that other remote trigger mechanism may be incorporated such as, by way of illustration and not limitation, pressure pads, shock indicators, sound detectors, and light beams connected to a means for releasing the retainer **60**, releasing the safety pin **48**, or retracting the retainer seat **64**.

Whether the weapon **10** is fired while hand-held or set and tripped by another, the projectiles **24** exit the launch port **28** through the same sequence of events. When the hammer **42** is

5 released from the cocked position the hammer spring **52** uncoils, throwing the hammer **42** toward the container **34**. The pointed ram **46** hits and ruptures the thin seal at the top of the container **34** causing the compressed-gas to violently escape in the usual manner. The escaping gas rushes past the hammer **42**, pushes open the check valve
10 **31**, and passes into the launch barrel **20** as indicated by the flow arrows **F**. The forces exerted by the gas push the projectiles **24** at rapid speed out the launch ports **28** and toward their intended target(s).

In the case of discrete projectiles **12** such as paint-balls,
15 the projectiles will be launched successively without interruption. That is, as a unit, like shrapnel. In the case of liquid, the projectile **12** will be launched en masse. It is considered that where only liquid projectile is launched, a shield (not shown) may cover the launch ports **28** to create a spray pattern or otherwise control the speed and
20 direction of the liquid projectile **12**.

Generally, the materials selected to construct the weapon **10** should be selected to endure harsh battlefield conditions. Heavy schedule PVC and non-corrosive metals are likely design choices.

While the present invention in its various aspects has
25 been described in detail with regard to a preferred embodiment, alternative embodiments are considered. It should be understood that variations, modifications and enhancements can be made to the disclosed apparatus and procedures without departing from the scope of the present invention as defined in the appended claims.

5 What is claimed is:

1. A projectile launching device, comprising:
a chamber housing including a charge chamber, a
hammer chamber, and a trigger;
a launch housing including a launch barrel and a
10 muzzle assembly rotatably attached to said launch barrel; and
a check valve located between said launch barrel
and said charge chamber.
2. The device of claim 1, wherein said projectiles are
15 a non-lethal colorant launched from said muzzle assembly.
3. The device of claim 2, wherein said projectiles are
lethal.
- 20 4. The device of claim 1, wherein said rotatable
muzzle assembly is fixed on a target and positioned to launch
projectiles.
5. The device of claim 1, wherein said charge
25 chamber receives and stores a charge.
6. The device of claim 1, wherein said charge is a
reservoir of releasable compressed gas.

5 7. The device of claim 1, wherein said hammer chamber further comprises a retractable hammer that, when released from a cocked position, is thrust toward said charge chamber.

 8. The device of claim 7, wherein said hammer is
10 retracted to said cocked position by the drawing action of said trigger.

 9. The device of claim 7, wherein said hammer is retained in said cocked position by securing said trigger, and released by unsecuring said trigger.

15

 10. The device of claim 7, wherein said hammer is retained in a cocked position by inserting a safety pin and released by removing said safety pin.

20 11. The device of claim 1, wherein said check valve permits flow only from said charge chamber to said launch housing.

5

12. A projectile launching device, comprising:

a chamber housing that includes a charge chamber which receives and stores a charge, a hammer chamber that includes a retractable hammer that when released from a cocked position is thrust toward said charge chamber, and a trigger that is drawn to retract said hammer to said cocked position;

a launch housing that includes a launch barrel joined to a rotatable muzzle assembly that is positioned on a target; and

15 a check valve located between said launch barrel and said charge chamber that permits flow only from said charge chamber to said launch housing.

13. A projectile launching device comprising a stationary launch barrel and a muzzle assembly rotatably attached to said launch barrel, such that said muzzle assembly may be aimed and the direction of projectile set without changing the position of said launch barrel.

20

5

14. A method of aiming and launching projectiles from a device, comprising the steps of:

securing said device to a surface;

loading projectiles into a launch housing;

10

inserting a charge into a charge chamber;

retracting and securing a hammer;

rotating a muzzle assembly to aim at a target;

setting a remote means for unsecuring said

hammer; and

15

engaging said means for unsecuring said hammer.

15. The method of claim 14, wherein said step of rotating a muzzle assembly further comprises the step of rotating a plurality of muzzle assemblies.

20

16. The method of claim 14, wherein said step of setting a remote means for unsecuring further comprises the step of connecting said means to said hammer.

25

17. The method of claim 14, wherein said step of engaging further comprises the step of unsecuring said hammer.

18. The method of claim 17, wherein said step of unsecuring further comprises the step of striking a charge.

30

5 19. A method of aiming and launching projectiles
from a device, comprising the steps of:

 providing a launching device comprising a launch
barrel and a muzzle assembly rotatably attached to said launch barrel;
 positioning said launch barrel in a first orientation;
10 aiming said muzzle assembly in a second
orientation; and
 firing a charge that pushes said projectiles through
said muzzle assembly.

15 20. The method of claim 19, wherein said step of
providing further comprises a launch barrel and a plurality of muzzle
assemblies rotatably attached to said launch barrel.

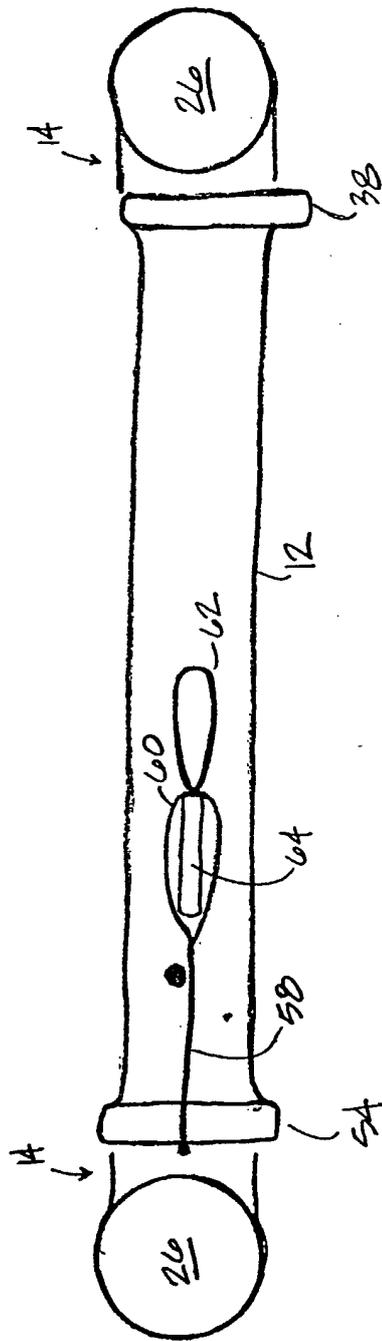


Fig. 2

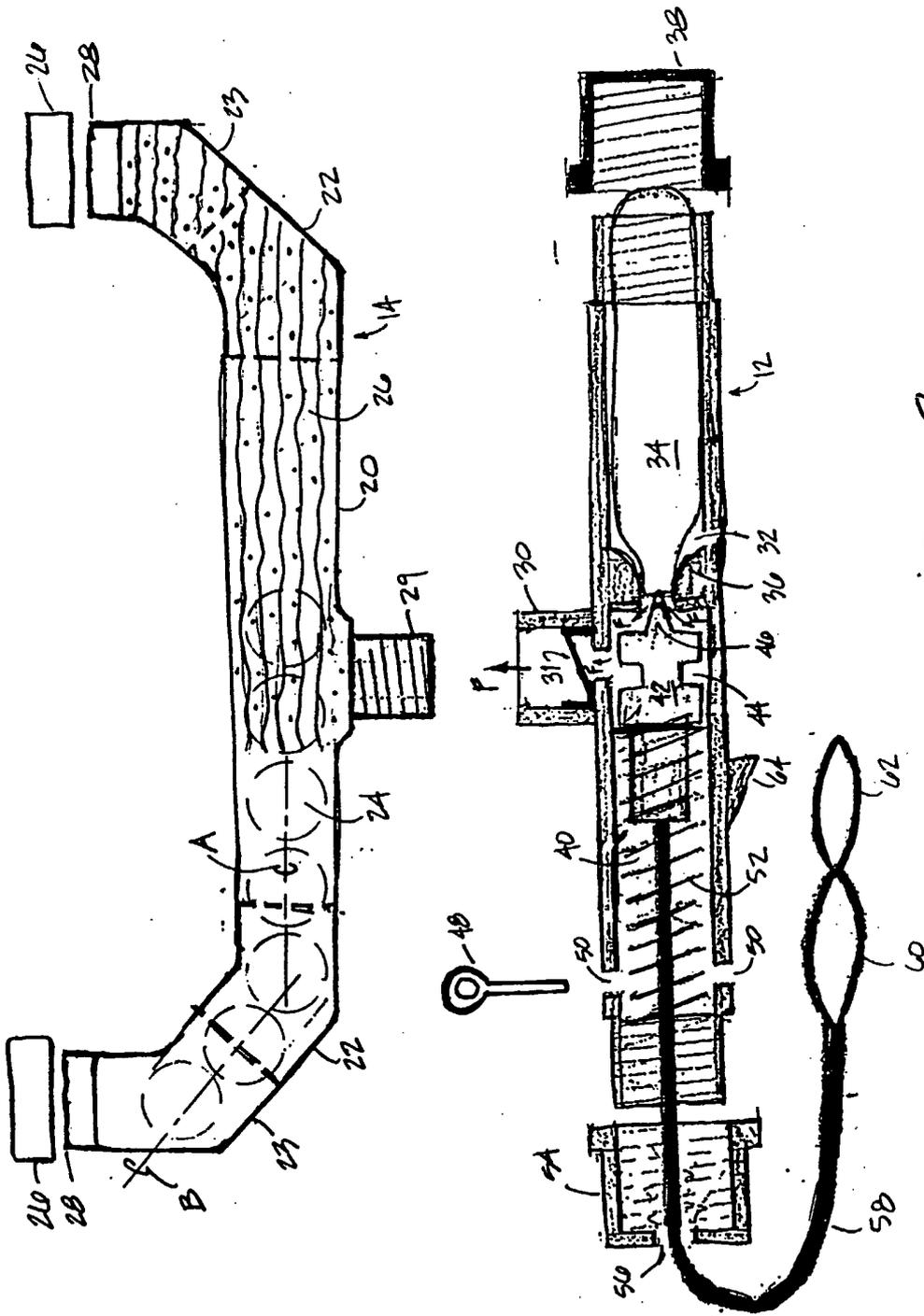


Fig. 3