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AUTOMATIC LIFE PRESERVER

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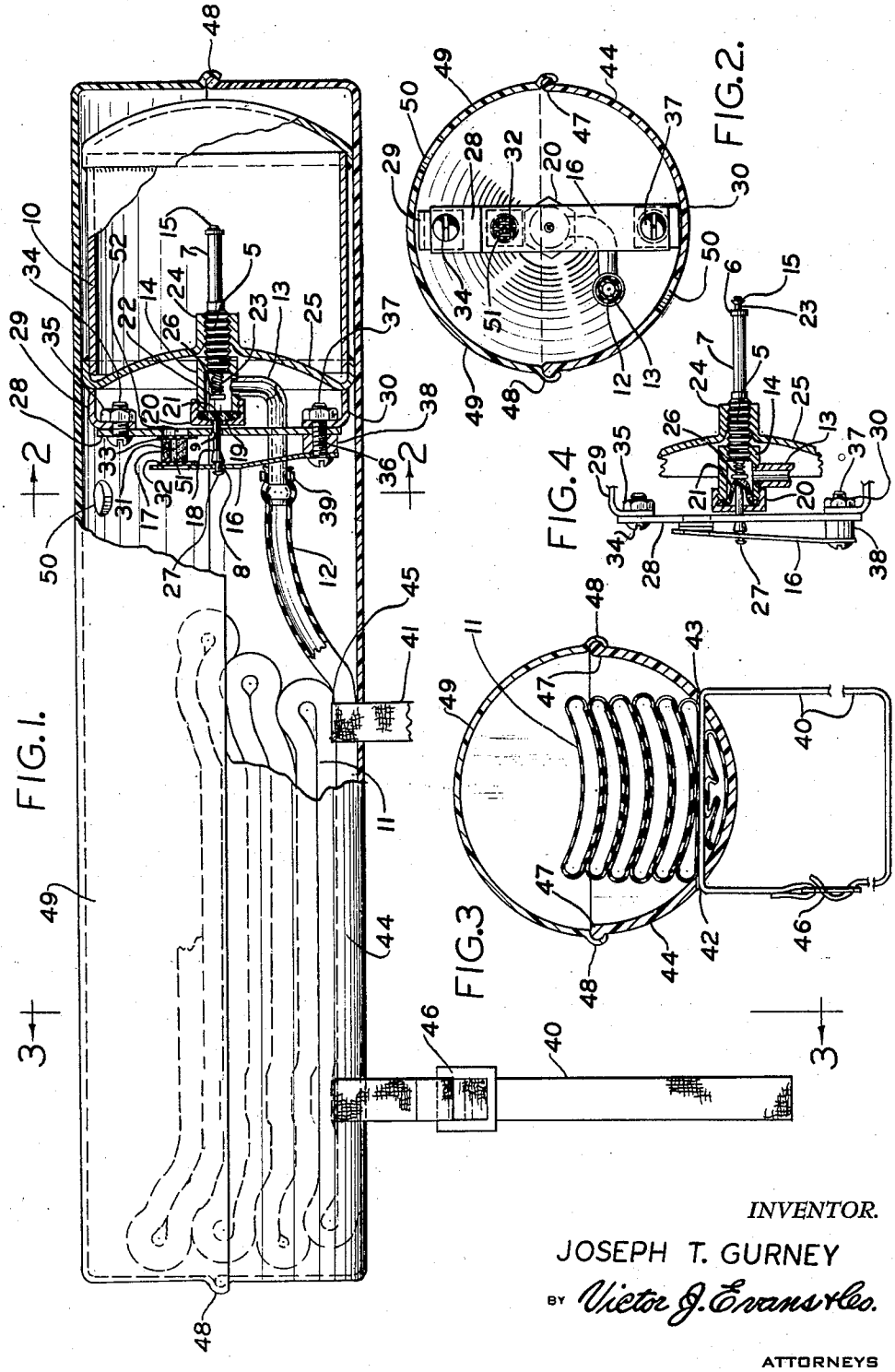


FIG. 1.



FIG. 2.



FIG. 4.



FIG. 3.

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# AUTOMATIC LIFE PRESERVER

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1 Claim. (Cl. 222—3)

This invention relates to life preservers or buoyant devices of the type adapted to be inflated as used and particularly of the type for supporting persons accidentally deposited into the water, and in particular, an air sack or bladder positioned, when deflated, in a separable tube with a tank of compressed gas also positioned in the tube and having a water soluble element for operating a valve in a connection between the tank and air sack to provide communication between the tank and sack as the device is placed in the water.

The purpose of this invention is to provide a self inflating life preserver which, when attached to infants, invalids, or disabled persons, will automatically inflate to provide means for maintaining the infant or person above the water until rescued.

Various types of devices have been provided for inflating buoyant devices, such as life preservers, particularly where people are thrown into the water in an emergency, however, the problem has been to provide suitable releasing devices whereby such devices are adapted to operate upon contact with the water. Devices of this type are only used in an emergency and as tests are very seldom made it has been found difficult to provide an automatic device operated by mechanical means that remains operative indefinitely. With this thought in mind, this invention contemplates a spring actuated valve opening device in which the spring is retained in position with a water soluble element such as a pellet of earth or the like wherein the pellet does not deteriorate and wherein the pellet is readily replaceable.

The object of this invention is, therefore, to provide means for releasing a compressed gas from a container to inflate a buoyant device whereby upon engagement with water the gas of the container is released so that a buoyant device is inflated thereby making it possible to provide a device, such as a lifesaver or an air sack, almost instantly.

Another object of the invention is to provide a buoyant device having inflatable means therein in which the device may readily be positioned upon the body of an individual.

A further object of the invention is to provide a buoyant device having inflating means in combination therewith in which the inflating means is controlled by a pellet of water soluble material in which the device is of a simple and economical construction.

With these and other objects and advantages in view, the invention embodies a tubular housing split longitudinally providing upper and lower sections with straps extended from one of the sections for attaching the device to the body of an individual and in which the sections are provided with a tank of gas under pressure, a deflated buoyant member, a valve controlled connection from the tank to the inflatable member and a spring controlled by a water soluble material for actuating the valve to provide communication between the interior of the tank and inflatable member whereby the gas under pressures is admitted to the inflatable member for inflating the same.



Other features and advantages of the invention will appear from the following description, taken in connection with the drawing, wherein:

Figure 1 is a side elevational view of the improved life preserver with parts broken away showing a gas pressure tank and a connection between the gas pressure tank and an inflatable element with with a spring actuated valve in the connection and with a water soluble pellet for retaining the spring actuated valve in the closed position.

Figure 2 is a cross section through the housing, taken on line 3—3 of Figure 1, showing the spring actuated valve element on a bar extended transversely across the housing.

Figure 3 is a cross section through the housing, taken on line 3—3 of Figure 1, showing the inflatable member collapsed and also showing a body attaching strap extended from the housing.

Figure 4 is a longitudinal section through the valve assembly showing the spring released and the valve in the open positions.

Referring now to the drawing, wherein like reference characters denote corresponding parts, the improved automatic life preserver of this invention includes a container or tank 10 of carbon dioxide, propane, or other expanding gas, an air sack or bladder 11 connected by tubes 12 and 13 to the tank 10, the tube 13 extending from a valve casing 14 having a valve element 15 therein, and a spring 16 retained in an extended position with a pellet 17 of water soluble material and having a pin 18 extended therefrom through an opening 19 in a cap 20 threaded on the end of the valve casing 14, the pin 18 being positioned whereby upon disintegration of the pellet 17 by being immersed in water it is moved inwardly by the spring 16 depressing a sealing disc 21, of rubber or other resilient material, whereby the disc engages a head 22 on the end of the stem 23 of the valve 5 forcing the valve element 15 away from the seat 6, as illustrated in Figure 4, and releasing the gas in the tank 10 whereby the gas flows through the bore of the valve body 7 around the valve stem 23 and through the connections 13 and 12 to the air sack 11.

A body 7 of the valve 5 is threaded in a nipple 24 extended inwardly from a head 25 of the tank 10, the nipple 24 being aligned with the valve casing 14 and the cap 20 being threaded on the extended end of the casing 14. The valve stem 23 on which the head 22 is positioned extends through a continuous open bore extended through the valve body 7 and the valve element 15 is retained against the seat 6 in the end of the body 7 with a spring 26 positioned around the stem 23. The diameter of the stem 23 is less than that of the bore of the valve body providing an open area extended through the valve body and through which air or other gas from the compressed air container 10 passes with the valve element 15 held away from the seat 6.

The extended end of the pin 18 is provided with a head 27 that is secured in an opening 8 in the spring 16 and the pin 18 also extends through an opening 9 in the bar 28.

The pellet 17, which is formed of rammed or compressed earth or other suitable water soluble material is positioned between the extended end of the spring 16 and a mounting bracket including a bar 28 and L-shaped arms 29 and 30 whereby the end of the spring and pin 18 are retained in outwardly extended positions.

The pellet 17 is provided with a bore 31 to facilitate circulation of water therethrough and wire mesh sections 32 and 33 are provided at the ends whereby water is adapted to circulate through the opening 31.

One end of the bar 28 is secured by a bolt 34 with a nut 35 thereon to the member 29 and the opposite end, by a bolt 36 with a nut 37 thereon, to the member 30.

A spacing element **38** is positioned on the bolt **36** to separate the end of the spring **16** from the bar **28**.

The tube **13**, which extends from the valve casing **14**, is connected to the tube **12** of the air sack **11** with a coupling member **39**, as shown in Figure 1, although it will be understood that the tube may be connected by other suitable means.

The device is provided with body straps **40** and **41**, the strap **40** extending through openings **42** and **43** in the wall of a lower section **44** of the tubular housing and the strap **41** extending through similar openings, as indicated by the numeral **45**. The straps are provided with buckles **46** for adjusting the length thereof to correspond with the chest or torso of a body upon which the device is positioned.

The upper edge of the lower section **44** is provided with a continuous bead **47** and a continuous arcuate flange **48** on the lower edge of an upper section **49** of the housing is adapted to snap over the bead **48**, as illustrated in Figures 1, 2, and 3 of the drawing. The material of the housing has sufficient resiliency inherent therein to permit the flange to snap over the bead and upon inflation of the air sack **11** the upper section or cover **49** is forced away from the lower section or base, the section **49** sinking in the water and the lower section **44** being retained on the surface of the water by buoyancy of the tank **10**. The sections **44** and **49** may, however, be retained in assembled relation by other suitable means. The sections are provided with openings **50** to admit water to the interior so that the water will dissolve the pellet **17** as soon as the device is placed in the water, and openings **51** and **52**, which are in registering relation with the opening **31** of the pellet **17** are provided in the spring **16** and bar **28**, respectively.

With the parts designed and assembled as illustrated and described, the device is secured on the chest or back of an individual with the straps **40** and **41** and upon coming in contact with water the water circulates through the openings **50**, **51**, and **52** whereby the water soluble pellet **17** disintegrates permitting the spring **16** to move the pin **18** inwardly, as illustrated in Figure 4, whereby the disc **21** of rubber or other resilient material engages the head **22** of the stem **23** of the valve **5** forcing the valve element **15** away from the seat, opening the valve. With the valve open, gas under pressure flows through the tubes **12** and **13** to the air sack **11** inflating the air sack, separating the sections of the housing and providing buoyant means for supporting an individual upon which the device is positioned.

It will be understood that modifications, within the scope of the appended claim, may be made in the design and arrangement of the parts without departing from the spirit of the invention.



What is claimed is:

In a life preserver filler, the combination which comprises an elongated casing, a tank positioned in one end of the casing, one end of the tank having an internally threaded nipple extended inwardly from the end wall thereof, a valve body having an open bore providing an air passage therethrough extended through the open bore and threaded in said nipple, a valve stem extended through the valve body and having a valve element on the end extended into the tank, the valve element being positioned to coact with a valve seat on the inner end of the valve body, the outer end of the valve stem having a head thereon, a spring extended around the valve stem and positioned with one end thereof against the head and the other against the threaded portion of the valve body for urging the valve element against the valve seat, a transversely disposed bar spaced from the end of the tank in which the valve is positioned and carried by arms extended from the tank, said bar having an opening therein and the opening through the bar being in alignment with the stem extended through the valve body, a spring mounted on one end of the transversely disposed bar and spaced from the bar, a pin carried by the spring, extended through the opening of the bar, and positioned to engage the head of the valve stem, and a water soluble pellet positioned between the extended end of the spring and bar for retaining the spring in such position that when the pellet is disintegrated by contact thereof with water the spring snaps the pin against the head of the valve stem opening the valve whereby gas under pressure in the tank is released through a tube extended from the valve body.

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