

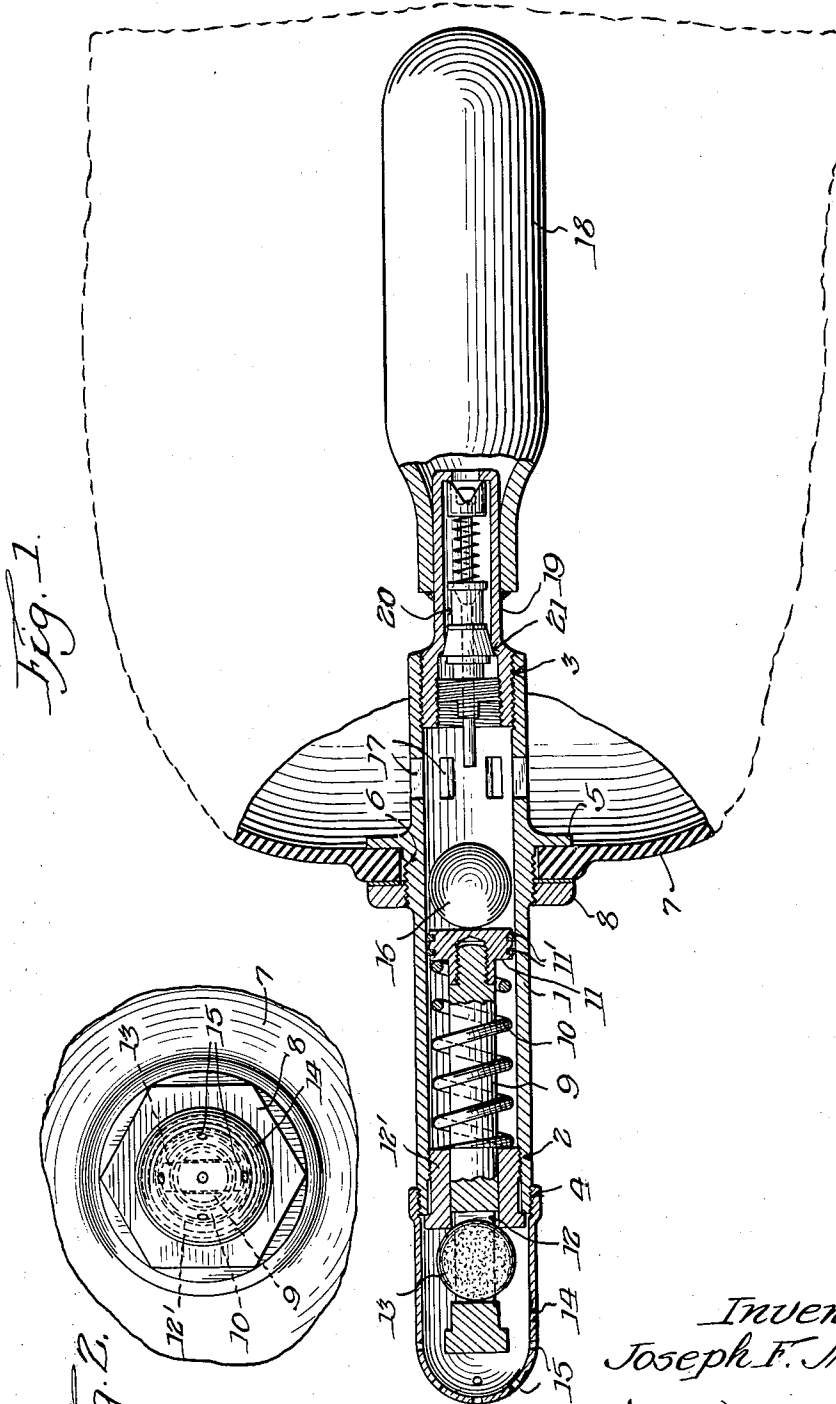
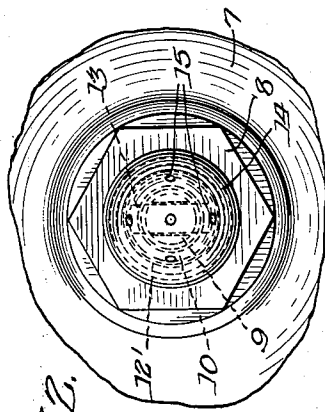
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AUTOMATICALLY ACTUATED FLUID PRESSURE DISCHARGE VALVE

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AUTOMATICALLY ACTUATED FLUID PRESSURE DISCHARGE VALVE

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4 Claims. (Cl. 137—67)

This invention relates to improvements in automatically actuated or triggered valves advantageous for use in connection with inflatable flotation bodies, such for example, as life preservers, boats, rafts, marking buoys and other kindred or similar contrivances, though not necessarily so limited in its scope of adaptation and/or usage.

An object of the invention is to provide a device of the stated character which, when connected to a container of pressured air, gas or other fluid, will become operative automatically as and when it is subjected to a predetermined amount of moisture (water, etc.) whereby to vent the container and allow the discharge of air, gas or other fluid therefrom into a receiving body, chamber or the like.

As and when the invention is connected to an inflatable flotation device, i.e., a life preserver, boat, raft, marking buoy, etc., it has for an object to provide the valved outletting means of an operatively associated container of compressed air, gas or other fluid with a disintegrable or soluble triggering means which, when subjected to a predetermined amount of moisture, will disintegrate or dissolve and in so doing, will open the outletting means to permit the discharge of compressed fluid from said container into the flotation device, hence, rendering the same buoyant.

The foregoing, as well as other objects, advantages and meritorious teachings of my invention, will be in part obvious and in part pointed out in the following described disclosure thereof, when taken in conjunction with the accompanying drawings, it being understood that the form of invention presented herein is precise and what is now considered to be the better mode of embodying its principles, but that other and further modifications and changes may be made in specific embodiment without departing from its essential features.

In the drawings:

Figure 1 is a longitudinal section through an automatically actuated fluid pressure discharge valve constructed in accordance with my invention, showing it adapted to an inflatable body and connected to a pressured fluid reservoir, and,

Figure 2 is an end view of the same.

Referring in detail to the drawings, my invention consists of a tubular casing 1 of appropriate length and internal area, open at both ends. The open end portions of the casing are preferably internally screw-threaded as at 2 and 3 and one end portion (the normally outer end portion) is externally screw-threaded, at 4, for a purpose hereinafter described.

The normally inner end portion of the casing is externally flanged or shouldered at 5 and externally screw-threaded at 6 whereby to receive or be received in an inflatable body 7, whereupon a jam nut 8, or its equivalent, is turned onto the screw-threads 6 and bindingly and sealingly engaged with an adjacent portion of said inflatable body.

At this point, it is noted that the inflatable body 7 may be that of various types of flotation devices, i.e.,

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life preservers, boats, rafts, marking buoys, etc.; moreover, that the scope of usage of my invention is not necessarily limited to flotation devices, but may be used to automatically trigger the discharge of pressured fluid (gas or liquid) from a suitable reservoir into or to many different forms or types of pressure actuated apparatuses or devices.

A plunger 9, normally loaded by a coiled spring 10, is slideably received within the casing 1, having a head 11 on its inner end and its outer end slotted, as at 12, and extended from and beyond the casing through a bushing or bearing sleeve 12' threadedly engaged in the internally screw-threaded portion 2 of the casing outer end. To prevent objectionable passage or dissipation of pressured or compressed air, gas or other fluid by the plunger head 11 through and from the outer end of the tubular casing, and to assure its complete and effectual passage through and from the fluid discharge ports or ways 17 in said casing (hereinafter described) suitable packing or sealing devices 11' are provided thereto. When in its inoperative or pre-operated position, the plunger will be positioned with relation to the casing in the manner shown in Figure 1 of the drawings with its slotted outer end portion extended from and beyond the same. In such position, it will be loaded by the coiled spring 10. Hence, a maintained urge to move or slide inwardly within the casing will be imparted thereto.

To releasably retain the plunger in its immediately above described relation within and to the casing 1, a moisture or liquid disintegrable or soluble body 13 (tablet, etc.) composed of aspirin, or the like, is engaged in the slotted portion 12 of the plunger rod. The size of this tablet is such that portions of it abuttingly engage the outer and adjacent end of the casing bushing 12. Thus, the plunger 9 is held in its inoperative or pre-operated position within the casing under inward thrust urge from the coiled spring 10.

A guard cap 14 having openings 15 therein is preferably threadedly engaged with the threaded outer end of the portion 4 of the casing 1. It serves to shield the disintegrable or soluble tablet 13 from undesired breakage and/or displacement, yet allow the passage of moisture thereto via the openings, particularly, as and when the device is submerged or is subjected to a predetermined amount of moisture.

A spherical body 16 is movably received within the casing 1, to-wit, in the area or chamber provided therein between the plunger head 11 and the normally inner open end of said casing. Being movable within such chamber, it is obvious that as and when inward sliding movement is effected by the plunger 9 under thrusting urge from the coiled spring 10, said spherical body will move therewith, for a purpose which will be presently described.

Fluid discharge ports or ways generally indicated by the numeral 17 are formed in and about that portion of the casing 1 inwardly of its external flange or shoulder 5 and within the inflatable body 7.

A container or reservoir 18 containing compressed air, gas or other fluid is provided to the casing 1. A tubular casing or sleeve 19 is fixedly engaged within and extends from its open or discharge end in the manner shown in Figure 1 of the drawings. The outer portion of said sleeve is preferably enlarged and externally screw-threaded for engagement in the internally screw-threaded portion 3 of the inner end of the casing 1. A spring loaded valve, generally indicated by the numeral 20, is received within the sleeve 19 and is normally engaged with a seat 21 provided therein, the stem of said valve being extended outwardly from and beyond the outer end of the sleeve and into the aforesaid casing chamber, to-

wit, to a point adjacent the discharge ports or ways 17 thereof.

Whereas I have shown in the accompanying drawings, one form of pressure fluid containing reservoir, it will, of course, be understood and appreciated that different types of such devices may be employed, insolong as the discharge portions of each are equipped with valved fluid outletting means.

In usage of my improved device and assuming that it has been installed in an inflatable body, such as generally illustrated and indicated by the numeral 7, with a disintegrable or soluble tablet 13 engaged in the slotted portion 12 of the rod of the plunger 9, in the manner shown, the discharge of fluid from the reservoir 18 via its discharge control valve means will be prevented. However, should the tablet 13 be subjected to a predetermined amount of moisture, as by being submerged or engaged in water, it will disintegrate. Thereupon, the spring loaded plunger 9 will be abruptly thrust inwardly driving the spherical body 16 inwardly through the casing 1 into thrusting engagement with the extended end of the stem of the reservoir discharge control valve 20, opening it and permitting the discharge of pressure fluid therefrom into the casing chamber from whence it will be discharged via the ports or ways 17 into the inflatable body 7. Thus, said inflatable body 7 will be rendered buoyant.

Because of the spherical form or shape of the body 16, it will be understood that when it is moved into thrusting engagement with the reservoir discharge valve stem 20, and adjacent the discharge ports or ways 17, it will not block or close said ports. Consequently, the discharge of fluid into the inflatable body 7 will not be impeded.

As I have hereinbefore stated, my invention is particularly advantageous for use in connection with inflatable bodies. However, it is to be understood that the same is in no manner limited to such usage. Conversely, it may be used as a means for automatically controlling the discharge and the passage of various forms of fluids or liquids from reservoirs so that such discharged fluids or liquids, under conditions such as hereinbefore described, will be discharged into motion transmitting and/or translating devices, as for example, devices employed in connection with the tops of so-called convertible types of automobiles. Thereby, as and when the device of the invention is automatically actuated, as when it is exposed and subjected to rain or other precipitation, the motion transmitting and/or translating device connected thereto will be operated to automatically raise or move the automobile top into operative or covering position.

I claim:

1. An automatically actuated fluid pressure discharge valve, comprising an open ended case, fluid pressure reservoir connecting means on and communicating with one end of the casing, a spring loaded plunger slideable within said casing slideable under spring urge in a direction toward said casing one end, the casing having fluid discharge ways formed therein between the connecting means and the inner end of the plunger, a spherical body loosely received and movable in the casing between the inner end of the plunger and the connecting means and in proximity to the discharge ways thrustingly engageable, at times, by the plunger inner end, and means on the remaining end of said plunger for receiving and retaining a disintegrable body whereby to connect the plunger to

the casing and retain the same in its spring loaded inoperative but at-ready position.

2. In combination with a fluid pressure reservoir having a valve controlled pressure discharge way communicating therewith, a tubular casing, means for connecting the valve controlled pressure discharge of said reservoir with one end of the casing, a spring urged plunger slideable within said casing, the casing having discharge ways formed therein between the plunger and said connecting means, motion transmitting means loosely received and movable within the casing between the plunger and the connecting means, and means on the remaining end of said plunger for receiving and retaining a moisture disintegrable body whereby to connect the plunger to the casing and retain it in an inoperative but at-ready position.

3. In combination with a fluid pressure reservoir having a valve controlled fluid discharge way communicating therewith, an open ended casing, means connecting the valve controlled fluid discharge way of the reservoir to one end of said casing, a spring loaded plunger slideable within the casing slideable under spring urge in a direction toward said connecting means, said casing having fluid discharge ways formed therein between the inner end of the plunger and said connecting means, a spherical body loosely and movably received in the casing between the inner end of the plunger and the connecting means and in proximity to the discharge ways whereby to be thrustingly engageable, at times, by the plunger inner end, and means on the remaining end of said plunger for receiving and retaining a moisture disintegrable body whereby to connect the plunger to the casing and retain the same in its spring loaded inoperative position.

4. In combination with a fluid pressure reservoir having a valve controlled fluid discharge way communicating therewith the valve of which has a stem extending outwardly from and beyond the same, an open ended casing connected to and communicable with said fluid discharge way and receiving an outer portion of said stem therein, a spring loaded plunger slideable within the casing movable in a direction toward said stem, said casing having peripherally disposed and relatively spaced fluid passage ways formed therein beyond the inner end of the plunger and in proximity to the outer portion of said stem, a spherical body loosely and movably received in the casing between the inner end of said plunger and the valve stem movable to and over said fluid passage ways, at times thrustingly engageable by the plunger inner end and thrustingly engageable with said valve stem whereby to open the valve controlled fluid discharge way, and means on the remaining end of said plunger for receiving and retaining a moisture disintegrable body whereby to connect the plunger to the casing and retain the same in spring loaded inoperative position.

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