

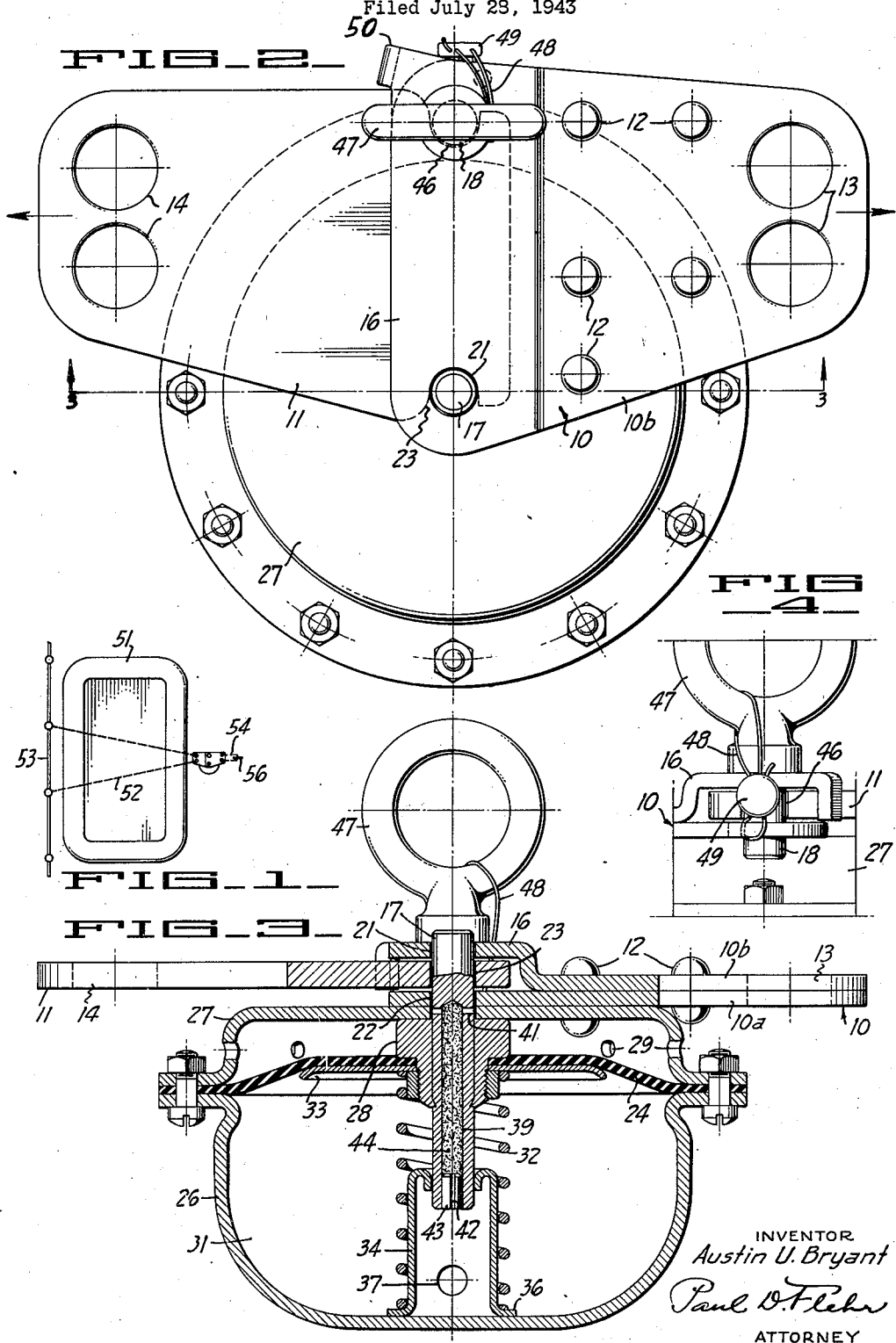
Oct. 24, 1944.

A. U. BRYANT

2,360,848

LIFE RAFT RELEASE DEVICE

Filed July 29, 1943



UNITED STATES PATENT OFFICE

2,360,848

LIFE RAFT RELEASE DEVICE

Austin U. Bryant, Berkeley, Calif., assignor, by
mesne assignments, to H. W. Holt and William
Sieverts, both of Quincy, Mass.

Application July 28, 1943, Serial No. 496,424

4 Claims. (Cl. 9—23)

This invention relates generally to releasable coupling devices for use with life rafts and like buoyant life saving devices.

It is an object of the invention to provide a relatively simple device of the above character which is operated automatically by water pressure when the device is immersed, and which can also be released manually when desired.

Another object of the invention is to provide a device of the above character which will not be subject to false automatic operation in response for example to sudden temperature changes.

An additional object of the invention is to improve upon devices of the type disclosed and claimed in Holt and Sieverts Patent No. 2,336,967, granted Dec. 14, 1943, and entitled "Life raft releasing device."

Additional objects of the invention will appear from the following description in which the preferred embodiments of the invention have been set forth in detail in conjunction with the accompanying drawing.

Referring to the drawing:

Fig. 1 is a plan view illustrating my device applied to the lashing down members employed for retaining a life raft to the deck of a ship.

Fig. 2 is an enlarged plan view of a device incorporating the present invention.

Fig. 3 is a cross-sectional view, taken along the line 3—3 of Fig. 2.

Fig. 4 is a detail illustrating the manually removable pin for manual release of the device.

The device as illustrated in the drawing consists of plate-like sections 10 and 11 formed of metal of suitable strength. Section 10 can be conveniently made of two parts 10a and 10b, which are secured together as by welding or rivets 12. Both sections are provided with openings 13 and 14 to facilitate attachment to the lashing down cords commonly employed with life rafts. The part 10b is provided with an offset portion 16, which in effect provides a bifurcated end portion for the section 10, and into which the adjacent portion of the section 11 may fit, substantially as illustrated in Figs. 2 and 3.

The two sections 10 and 11 are attached together by two pins or bolts 17 and 18, and normally these pins lock the sections together in such a manner that removal of either pin to a retracted position permits the two sections to separate completely. As shown in Fig. 2 the two pins 17 and 18 are spaced apart a substantial distance, and they are located upon opposite sides of the general line of pull established when lash-

ing cords are attached through the openings 13 and 14. Pin 17 extends through the openings 21 and 22 in the section 10, and also engages within the outwardly faced recess 23, formed in the section 11.

The fluid operating means for pin 17 includes a diaphragm 24 which is formed of suitable flexible material, such as leather, or fabric impregnated with a natural or synthetic rubber. The outer peripheral edge of this diaphragm is shown clamped between a dome-shaped part 26, and a dished mounting 27 which is rigidly attached to the section 10. The central portion of the diaphragm is attached to the ferrule or fitting 28, which in turn is secured to the pin 17. Member 27 is shown provided with openings 29, so that the one side of the diaphragm is exposed to the atmosphere and to the pressure of water when the device is completely submerged. Dome 26 forms a closed air chamber 31 upon the other side of the diaphragm.

Pin 17 is urged towards the engaged position shown in Fig. 3 by the compression spring 32. The upper end of this spring is shown engaging the metal diaphragm plate 33, underlying the flexible diaphragm 24, while the other end of the spring surrounds and is seated upon a guide sleeve 34. The flanged end 35 of sleeve 34 is attached to the dome 26 by suitable means such as welding or brazing, and the interior of the sleeve is in free communication with the chamber 31 through one or more openings 37.

For reasons to be presently explained it is desirable to have a restricted bleed communication between the atmosphere and the chamber 31. For this reason pin 17 is shown provided with a central bore 39, the outer end of which communicates with the atmosphere through ducts 41. The other end of bore 39 communicates with the interior of sleeve 34 through a duct 42 formed in the plug 43. The passage formed by bore 39 is occupied by a fibrous filler 44, the character of which may vary. For example good results have been secured by employing a rope or cord of suitable diameter made of cotton fiber. It will be noted that the inner end of pin 17 extends into the sleeve 34, whereby the pin is guided for easy sliding movement.

Pin 18 extends through openings in section 10 in the same manner as pin 17, and also engages within an outwardly faced recess 46 provided in section 11, and formed the same as recess 23. One end of the pin 18 carries the pull ring 47, to facilitate manual removal. It is desirable to have the pin 18 retained by means which must be

broken before the pin is removed. For this purpose it is satisfactory to provide a retention wire 48, in conjunction with a seal 49 formed of lead or like material. Upon twisting the ring 47 the wire or the seal can be readily broken, after which the pin can be removed.

A small lug 50 is shown extending from the offset portion 16. This lug serves to cam against the adjacent edge of part 11, when pin 17 is retracted, thus positively forcing recess 46 free of the pin 18.

The coupling device described above can be used in various ways to retain buoyant life saving devices for either automatic or manual removal. One such arrangement is shown in Fig. 1 in which the buoyant life raft 51 is held down by the cords 52. These cords are attached to the railing 53 of a ship's deck, and to the openings 14 in the section 11. The openings 13 in section 10 are shown connected by cords 54 to the deck anchoring 56.

Normally the two sections 10 and 11 are locked together in the manner illustrated in Figs. 2 and 3. In the event it is desired to release the raft, the pull ring 47 is engaged and the pin 18 retracted. This permits the sections 10 and 11 to completely separate, with these sections first pivoting about the pin 17, after which recess 23 frees itself. If there should be no manual operation of the device before sinking of the ship, water pressure acting upon the diaphragm 24 serves to retract the pin 17, thus likewise causing the sections 10 and 11 to separate. Here again immediately following retraction of pin 17 the two sections 10 and 11 pivot about the center of pin 18, after which recess 46 frees itself from the pin 18 and the two sections separate completely.

In the event of a sudden drop in temperature the air within chamber 31 contracts, and unless this chamber has some communication with the atmosphere the partial vacuum created might cause false operation of the device. With my device however the pressure within chamber 31 remains substantially the same as atmospheric pressure, because of the restricted air flow which may occur through the bore 39. The fibrous filler 44, while permitting flow of air sufficient to insure equalization of pressures, will not permit sufficient flow of water upon immersion to interfere with proper operation of the device. In other words the interstices or spaces between the fibers will pass air, but tend to retain water by capillary attraction, to retard flow of water and thus prevent any appreciable filling of the chamber 31 with water before operation.

I claim:

1. In a coupling device for releasably holding together the lashing down members of a life raft, a main section and a cooperating section, each of said sections having a portion of the same adapted for attachment to lashing and being so located that normally a general line of pull is established through the sections, a bolt or pin movably mounted on the main section and located in a position spaced laterally from the general line of pull, said pin normally interlocking in an outwardly faced recess provided in the

adjacent part of the cooperating section, a chamber mounted on the main section, a fluid pressure operated member within the chamber and connected to the bolt, whereby the pressure of water upon said member serves to move the bolt from an engaged to a retracted released position responsive to submerging of the device in water, and manually releasable interlocking portions formed on both sections and located upon the other side of the general line of pull, said last named portions being formed to be locked together when said sections are in a normal position and to be unlocked and released when said sections are moved angularly with respect to each other after release of said bolt and by pull upon the lashings.

2. In a coupling device for releasably holding together the lashing down members of a life raft, a main section and a cooperating section, each of said sections having a portion of the same adapted for attachment to lashings and being so located that normally a general line of pull is established through the sections, said cooperating section being provided with recesses normally spaced on opposite sides of the line of pull and faced outwardly from the same, a bolt or pin movably mounted on the main section and adapted to normally extend into one of said recesses, fluid pressure operated means for moving said pin to retracted position responsive to submerging of the device in water, and a second pin movably mounted upon the main section and normally extending into said second recess, said pin being manually retractable for effecting manual separation of said sections.

3. In a coupling device for releasably holding together the lashing down members of a life raft, a pair of cooperating sections each having a portion of the same adapted for attachment to lashing, means serving to releasably couple said sections together including a pin movably carried by one of the sections, said pin when moved to a retracted position serving to permit said sections to separate, a fluid operated diaphragm connected to said pin, means forming an air chamber upon one side of the diaphragm, whereby the other side of the diaphragm is exposed to the pressure of water when the device is submerged, said chamber having restricted communication with the atmosphere.

4. In a coupling device for releasably holding together the lashing down members of a life raft, a pair of cooperating sections, each section having a portion of the same adapted for attachment to lashing and being so located that normally a general line of pull is established through the same, means for releasably connecting the sections together including a pin movably mounted upon one of the sections, a fluid pressure operated diaphragm connected to said pin, means forming a closed air chamber upon one side of the diaphragm, and means forming a bleed passage serving to connect the interior of the chamber with the atmosphere, said passage containing a fibrous filler to retard flow of water through the same.

AUSTIN U. BRYANT.