

June 12, 1956

A. L. CRAFT
LIFE SAVING DEVICE

2,749,560

Filed June 16, 1954

2 Sheets-Sheet 1

Fig. 1

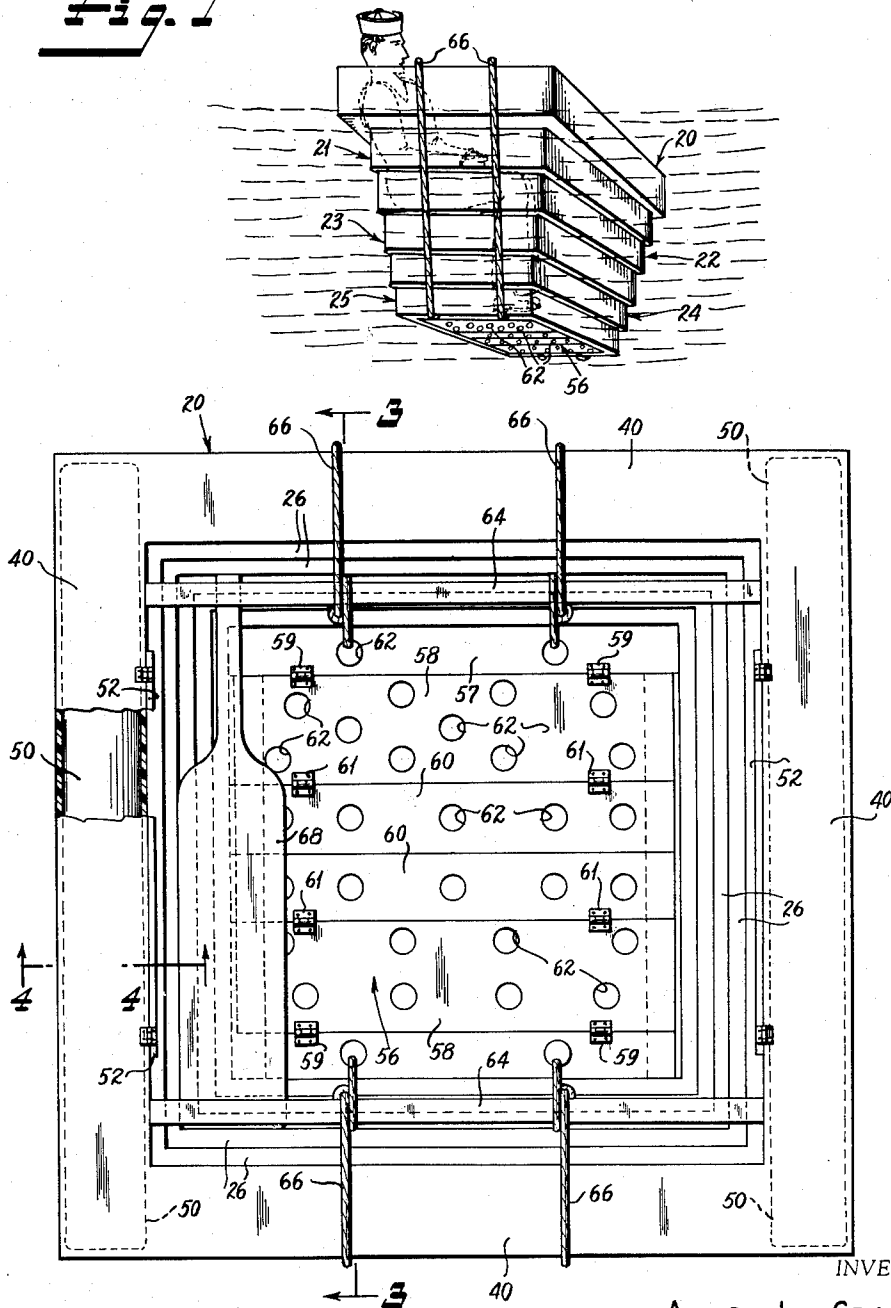


Fig. 2

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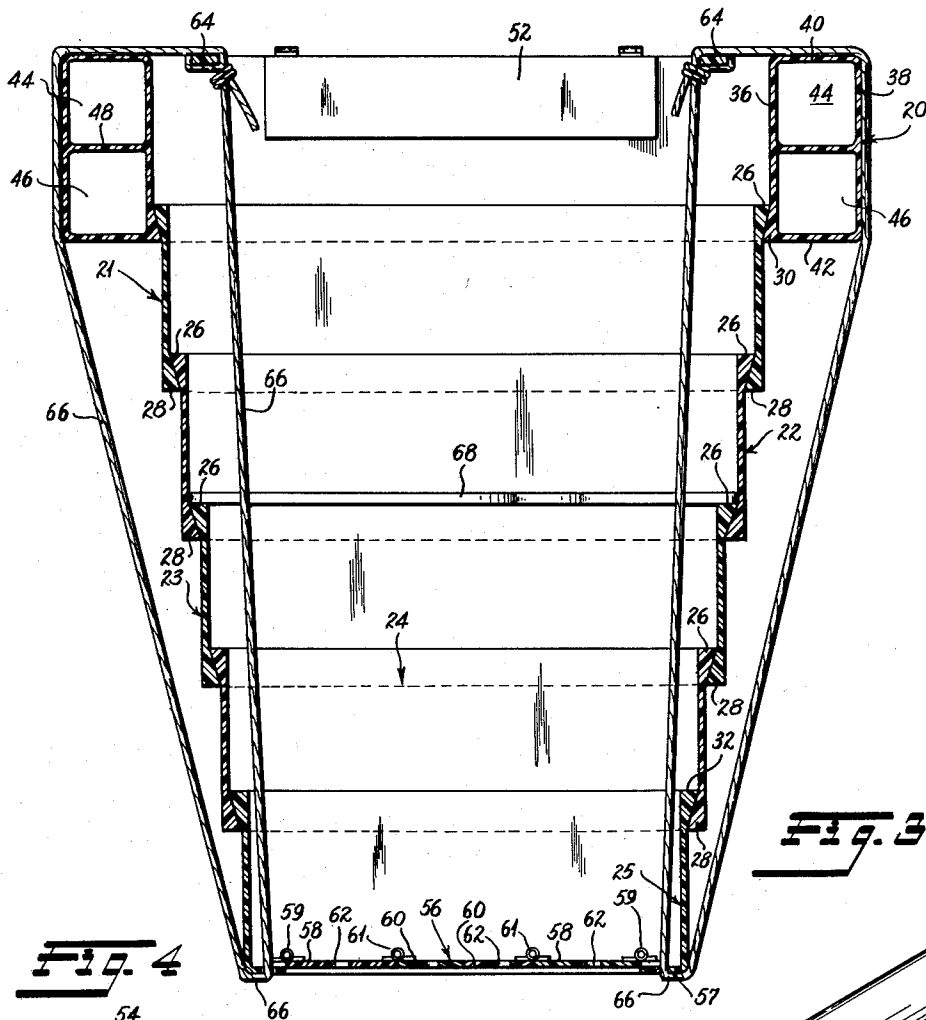


Fig. 3

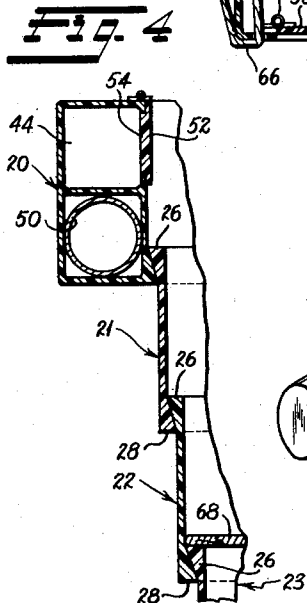


Fig. 4

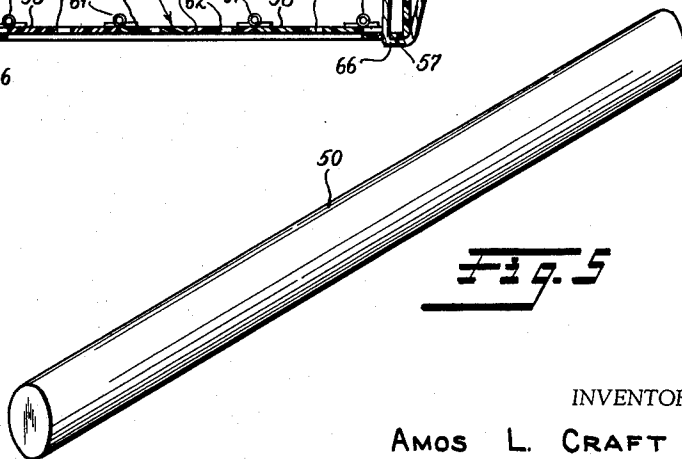


Fig. 5

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LIFE SAVING DEVICE

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5 Claims. (Cl. 9—11)

This invention relates to life saving devices and more particularly to such devices which are adapted to enclose and protect as well as support one or more persons.

There are many devices of this general character now in general use including such well known devices as life rafts, inflatable or solid vests and the traditional cork lifesaver. Despite their widespread use each of these devices has one or more serious deficiencies.

For example, the life rafts are extremely unstable and may be capsized easily either because of rough weather or inadvertent movements of the occupant or occupants. Solid vests or rings of cork or kapok offer effective support to the wearer for very limited times, usually under twelve hours. Life preservers of this latter type offer little or no storage space for food or medical supplies and provide no protection against the attacks of fish. All inflatable life preservers are notoriously vulnerable to puncture damage which renders them useless.

Collapsible life preservers including a number of rigid sections have also been proposed. The life preserver disclosed in U. S. Patent 1,078,640 is typical of such prior devices. The lack of stability, complexity, bulk and expense of the preserver and others of similar construction have prevented their commercial adoption.

The improved life preserver of the present invention which accomplishes this primary object and other objects comprises essentially a plurality of rigid body elements of the same shape and substantially the same height which are arranged for telescoping movement between a collapsed position for compact storage and an extended position to form a rigid enclosure for the user. Preferably only the uppermost section is made buoyant and the lower sections when in use extend beneath the surface of the water and are normally filled with water. This construction is extremely stable and provides complete protection to the occupants while permitting them to rest or sleep in comparative comfort and safety.

It is a further object of the present invention to provide improved life preservers which are stable, virtually unsinkable and are of strong and durable construction.

It is also an object to provide improved life preservers which may be collapsed for compact storage and extended to form a rigid enclosure in which the occupant is supported in reasonable comfort and protected against the attacks of fish.

It is a further object to provide improved life preservers, which, despite their compact construction, have ample space for the storage of medical supplies and food supplies sufficient to sustain life for over thirty days.

It is an additional object to provide improved life preservers which comprise components of simple construction which may be inexpensively fabricated and easily assembled.

It is also an object to provide improved life preservers which are light in weight and compact for ease of storage and handling.

It is a further object to provide improved life preservers which are normally partially submerged in use

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for stability and which include means for varying the degree of submersion to facilitate movement of the preserver through the water.

It is also an object to provide improved life-preservers which in use form a tubular space enclosing, supporting and protecting the occupant, the preserver being constructed to permit entry from the bottom as well as the top.

Additional objects and advantages will become apparent as the description proceeds in connection with the accompanying drawings in which:

Figure 1 is a pictorial representation of the life preserver constructed in accordance with the invention in use;

Figure 2 is a top plan view of the life preserver of Figure 1;

Figure 3 is a vertical section taken along line 3—3 of Figure 2;

Figure 4 is a fragmentary vertical sectional view taken along line 4—4 of Figure 2; and

Figure 5 is a perspective view of a component of the life preserver of the present invention.

Referring now more particularly to the drawings, the principal structural components of the life preserver of the present invention are the main body section indicated generally at 20, a plurality of intermediate sections indicated generally at 21, 22, 23 and 24 respectively and a bottom body section indicated generally at 25. The several body sections 20—25 are preferably constructed of a suitable plastic or plastic laminate and because of their simple structural configuration these components particularly the intermediate and bottom body sections lend themselves to moulding by conventional techniques. While other materials such as sheet metal can be utilized, plastics are preferred because of their light weight easy fabrication, their durability and their corrosion resistance which minimizes or eliminates the problem of maintenance. For reasons which more fully appear hereinafter all of the body sections are preferably constructed of a material having a specific gravity greater than that of water.

The intermediate body sections 21—24 are of tubular form and are of identical construction except for a variation in their lateral dimensions. As best seen in Figure 3 the successive intermediate body sections 21—24 are arranged for telescoping movement between a collapsed position, not shown, which has substantially the same height as that of any of the individual components and the fully extended position shown in Figures 1 and 3.

With continuing reference to Figure 3 it will be seen that each of the intermediate body sections 21—24 is provided around its upper periphery with an outwardly directed tapered flange 26 and around its lower periphery with an inwardly directed similarly tapered flange 28. The intermediate body sections 21—24 are so proportioned that when the device is extended, as shown in Figure 3, the inclined surfaces of the adjacent flanges 26 and 28 are in full surface contact and thus establish the fully extended position of the intermediate sections. The upper flange 26 of the intermediate body section 21 similarly engages a flange 30 formed around the lower inner periphery of the main body section 20 and the lower flange 28 formed on the intermediate body member 24 engages a similar flange 32 formed around the upper peripheral edge of the bottom body section 25.

When, as shown, the body members are made of plastic or plastic laminate, the flanges 26, 28, 30 and 32 are preferably moulded integrally with the body sections. However, when other materials are used separate flange members may be employed in the place of the integral ridges shown.

The main body member 20 is constructed in the form of a hollow annulus having inner and outer peripheral

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walls 36 and 38, respectively, to which top and bottom cover members 40 and 42, respectively, are permanently secured. The hollow interior of the member 20 is preferably divided to an upper annular chamber 44 and a lower annular chamber 46 by a horizontal strip or plate 48. While the chamber 46 and portions of the chamber 44 are water tight and thus provide considerable buoyancy they are nevertheless subject to damage which might destroy their buoyancy. Accordingly, light metal cylinders 50 preferably filled with helium are permanently installed in the chamber 46 along two sides of the main body section 20 as shown in Figures 2 and 4. The inclusion of these cylinders both increases the buoyancy of the unit and insures continued buoyancy despite possible damage to the body section 20.

The remainder of the chamber 46 extending along the other sides of the body section 20 and the entire section 44 is available for storage. In the embodiment shown only the portion of the chamber disposed above the cylinders 50 is so utilized, doors 52 being provided to afford access to the interior of the storage chamber. The doors 52 are preferably provided with sealing plates or strips 54 to maintain the storage chamber 44 substantially water tight to protect food and medical supplies stored therein. If additional storage space is required it will be obvious that additional doors can be provided affording access to the chambers 44 along the other two sides of the body section 20.

The bottom body section 25 is generally similar to the intermediate sections 21—24 except that it is provided with a bottom wall assembly indicated generally at 56 which has three important functions which contribute significantly to the improved operation of the life preserver disclosed herein. It provides support for a substantial portion of the weight of the occupant. It permits entry of water into the interior of the space enclosed by the intermediate body sections so that a substantial portion of the device is submerged to increase its stability. Finally it affords an alternate path of entry into the preserver so that it may be entered by an occupant either from the top or through the bottom wall assembly.

The assembly 56 comprises an integral inwardly extending relatively narrow rim 57 extending around the periphery of the bottom body section 25 and hinged floor sections 58 and 60. The floor sections 58 are each supported on hinges 59 mounted on opposite portions of the rim 57 and at their opposite ends extend over the other rim portions so that they may be freely moved upwardly but are rigidly supported against downward movement. The floor sections 60 are mounted on hinges 61 on the free edges of the hinged floor sections 58 and are also supported at their opposite ends on the rim 57. The hinged sections 58 and 60 are so proportioned that as shown in Figures 2 and 3 the free edges of the hinge sections 60 meet substantially centrally of the bottom body section 25.

The rim 57 and each of the hinged floor sections 58 and 60 are provided with a plurality of perforations 62 to permit the free flow of water into and out of the space defined by the intermediate body sections 21—24 and the bottom body section 25.

To impart additional structural rigidity to the main body section 20, two rigid bars 64, preferably of plastic, extend across the body section 20 adjacent the opposite sides thereof in a directional normal to the helium filled cylinders 50 and are rigidly secured at their opposite ends to the inner body wall 36, flush with the top of these walls. It will be understood that the bars 64 are installed after assembly of the body sections. A pair of flexible cords 66 are attached to one of the bars 64 and as shown particularly in Figure 3 extend over and around the body sections 20—25 through adjacent perforations in the rim 57 of the bottom wall 56 of the bottom body section 25 and are attached at their opposite ends to the respective bars 64. The cords may also extend between the opposite bars 64. In addition to providing structural

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rigidity the bars 64 also provide grips against which an occupant may brace himself in rough weather. The ropes, if extended across the space between the bars 64 to some extent tie the occupant in the preserver.

Also by adjustment of the length of the ropes 66 the draft of the life preserver may be regulated as desired. When maximum stability is required or when drifting is to be minimized the life preserver will preferably be fully extended as shown in Figure 3. However, when it is desired to move the life preserver through the water, the cords 66 may be adjusted to decrease the draft of the life preserver to any desired amount to facilitate its movement through the water.

To increase the comfort of the occupant a removable seat 68 is provided having a length preferably substantially equal to the inner dimension of the intermediate wall section 22 so that its opposite ends and one lateral edge may be supported on the ledge 26 formed on the upper surface of the intermediate body section 23. The seat 68 as shown is constructed in the form of a paddle so that it may be removed and used as a means for propelling the preserver through the water when desired. If desired the seat may be permanently installed.

The life preserver is normally stored in its fully collapsed position and is held in this position by clips or straps not shown. When it becomes necessary to use the life preserver, the clips or straps are released and the life preserver is thrown into the water. Since the water freely enters the device through the apertures 62, the device immediately upon contact with the water begins to extend and to assume the position shown in Figure 3. Even when the extension is partially complete the device is sufficiently stable to permit a person in the water to climb into the device over its side and when the occupant's weight is applied to the floor of the device it rapidly assumes the fully extended position shown in Figure 3 in which it has complete stability regardless of weather conditions or of movements or the disposition of the weight of the occupant.

By reason of the hinged floor assembly 56 the device may also be entered from beneath. The floor sections 61 may be folded over the sections 58 and the sections 58 may then be folded upwardly for this purpose.

It will be seen from Figure 1 that the occupant can assume a relaxed sitting position within the device from which he cannot be dislodged by rough weather. In this position the occupant is completely protected from fish and may relax or sleep in relative comfort and safety.

As illustrated, the device is constructed for the support and protection of a single occupant and in one commercial form comprises in addition to the main and bottom body sections four intermediate sections, all of the sections being approximately seven inches deep. In this unit, which is square, the outside width of the main body section is twenty-eight inches and the inside measurement is twenty-three inches to form a storage chamber approximately five inches in depth. The bottom section is approximately twenty inches square. The wall thickness throughout is approximately one-sixteenth of an inch. However, it is to be understood that this example is given by way of illustration only and that considerably larger dimensions are feasible so that the device may be used to support several occupants. Also it is to be understood that the entire life preserver may be not only square as shown but rectangular, round, oval or any other shape as desired.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

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What is claimed and desired to be secured by United States Letters Patent is:

1. A life saving device comprising, in combination, a main body section, a plurality of independent shell-like secondary body sections, a bottom body section, each of said sections being of substantially the same height and of similar shape, and said sections being adapted to telescope within the adjacent section whereby said device may be collapsed for storage and extended for use, means forming a hinged floor assembly in said bottom body section adapted to permit the entry of an occupant into the device through said floor assembly, and means forming perforations in said floor assembly to permit the entrance of water into each of said secondary sections and said bottom section whereby each of said secondary sections is disposed below the water level when the device is in use to thereby stabilize the device.

2. A life saving device comprising, in combination, a main body section, a plurality of independent shell-like secondary body sections, a bottom body section, each of said sections being of similar shape and the height of said main body section being at least equal to the height of the remaining sections, and said sections being adapted to telescope within the adjacent section whereby said device may be collapsed for storage and extended for use, means forming a door assembly in said bottom body section adapted to open inwardly of said device, means preventing outward movement of said door assembly whereby said door assembly permits the entry of an occupant into the device through said door assembly, and said door assembly, after being closed, effectively supports an occupant in said device, and means to retain said sections in assembled relation in extended position.

3. A life saving device comprising, in combination, a main body section, a plurality of independent shell-like secondary body sections, a bottom body section, each of said sections being of similar shape and the height of said main body section being at least equal to the height of the remaining sections whereby said device may be collapsed for storage and extended for use, means forming a hinged floor assembly in said bottom body section adapted to permit the entry of an occupant into the device, and means forming openings in said bottom body section

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to permit the entrance of water into the space enclosed by each of said secondary sections and said bottom section whereby each of said secondary sections and said bottom section is disposed below the water level when the device is in use to thereby stabilize the device.

4. A life saving device comprising, in combination, a main body section, a plurality of independent shell-like secondary body sections, a bottom body section, each of said sections being of similar shape and the height of said main body section being at least equal to the height of the remaining sections, said sections being adapted to telescope within the adjacent sections whereby said device may be collapsed for storage and extended for use, means in said main body section for rendering said main body section buoyant, the remaining sections having a specific gravity greater than water, means in said bottom body section to admit water into the space enclosed by said secondary body section and said bottom body section whereby each of said secondary body sections and said bottom body section is disposed below the water level when the device is in use to thereby stabilize the device, cooperating means on adjacent sections for limiting the extension of said device, and additional means accessible from the interior of the device for limiting the extension of said device to decrease the draft of said device and thereby facilitate movement through the water when in use.

5. The life saving device according to claim 4 wherein the last-mentioned means comprises flexible cords secured to said main body section and connected to said bottom body section.

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