Nov. 16, 1971 E. J. KELLER 3,619,833

PLASTIC RAFT

Filed May 13, 1969 2 Sheets-Shoot 1

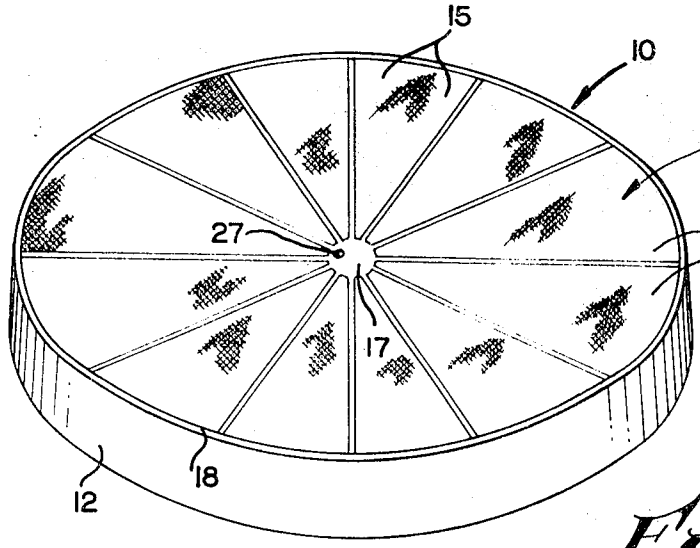


Fig. 1

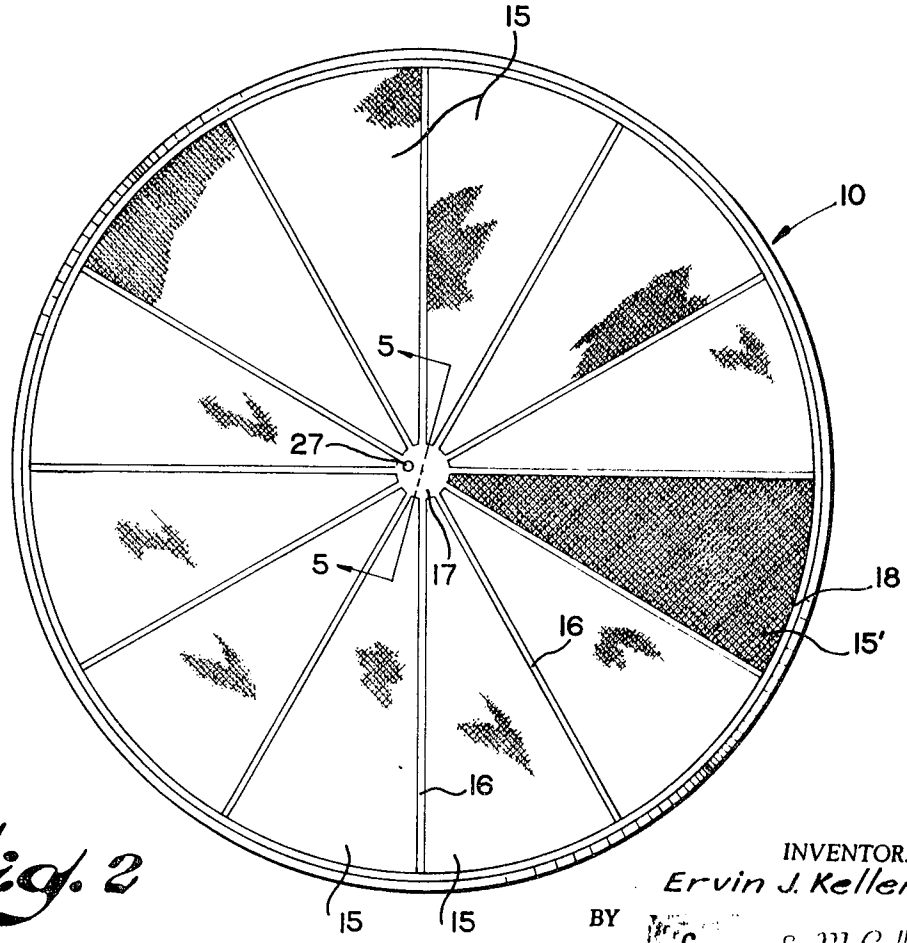


Fig. 2

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PLASTIC RAFT

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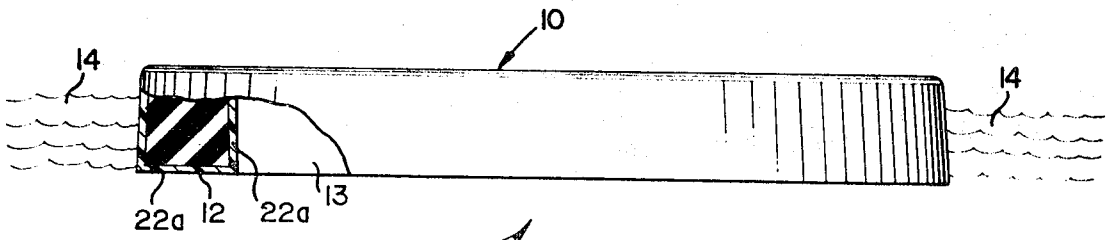


Fig. 3

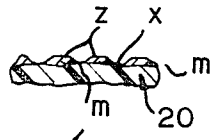


Fig. 7

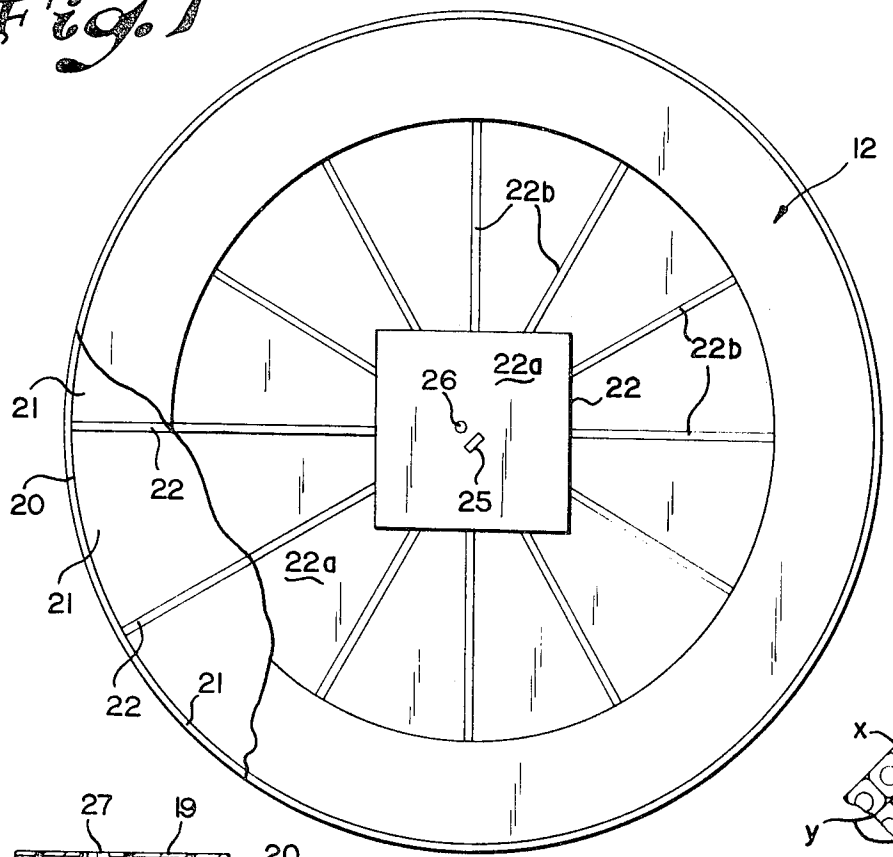


Fig. 4

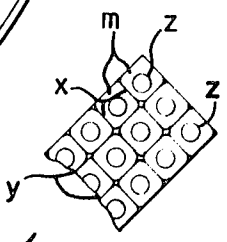


Fig. 6

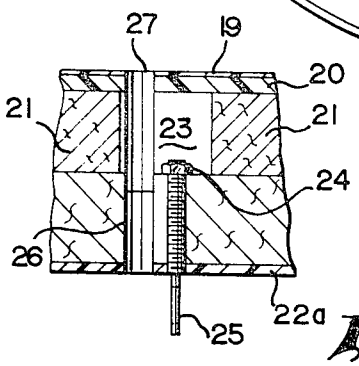


Fig. 5

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3,619,833

PLASTIC RAFT

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Int. Cl. B63c 9/04
U.S. Cl. 9—11 8 Claims

ABSTRACT OF THE DISCLOSURE

A lightweight plastic raft including a top support surface with a dependent rigid foam plastic ring side providing flotation and defining a central air chamber. Slightly spaced, segment shaped, rigid cores are provided for the top joined by the fibre glass resin composition with which the top is coated. A valve communicates the air chamber with atmosphere and permits the raft to be vacuum locked to the water.

One of the prime objects of the invention is to provide a lightweight raft of attractive and pleasing appearance which is relatively economical to fabricate and requires no maintainence.

Another object of the invention is to provide a strong and durable raft of the character described which can be readily installed and removed from installed position.

A further object of the invention is to provide a raft of the character described which may be locked in a position of adjusted height in the water and at the same time locked in a stabilized position which prevents tipping.

Still another object of the invention is to design a self-draining raft having an upper surface configured so that it is comfortable for sun bathing but at the same time provides a non-slip surface when wet.

Another object of the invention is to provide a raft which avoids any problems with bathing suits snagging or slivers.

Other objects and advantages of the invention will become readily apparent when considered with the attached description and with the accompanying drawings.

Briefly, in its broad aspect the invention is concerned with a fibre glass raft including segmented cores and having a wall side formed by a flotation providing member.

In the drawings:

FIG. 1 is a perspective plan view of my raft;

FIG. 2 is a top plan view thereof;

FIG. 3 is a partly sectional, side elevational view;

FIG. 4 is an under plan view with a portion partially broken away to expose the interior construction thereof;

FIG. 5 is a considerably enlarged, fragmentary, sectional elevational view taken on the line 5—5 of FIG. 2;

FIG. 6 is a fragmentary, enlarged plan view illustrating the configuration of the tread surface; and

FIG. 7 is a sectional elevational view thereof.

Referring now more particularly to the accompanying drawings, a letter **10** generally designates a raft which as shown is circular in form and comprises a slightly pitched upper surface or top generally designated **11** supported on a dependent side wall **12** formed by a ring (see FIG. 3) of rigid polyurethane foam. The foam ring **12** provides adequate buoyance when the raft is in the water to support swimmers with a total weight in the neighborhood of 2500 lbs. if need be, and marginally defines a closed space or chamber **13** between the water **14** and the top or support surface **11**.

As FIGS. 1 and 2 particularly indicate, the surface of the raft top **11** is configured to pie-shaped sections **15** separated by narrow smooth surfaced portions **16** which at their radially inner ends merge into a smooth surfaced circular central portion **17**. The pie-shaped sections **15**

are provided with a tread surface, as shown at **15'**, and it is to be understood that this tread surface **15'** is provided in exactly the same manner on each pie-shaped segment **15**. Further it will be noted that the tread surface **15'** extends to a rounded peripheral edge portion **18** which joins the top **11** with the outer peripheral surface of the ring **12**. The tread surface consists of parallel grooves *x* and *y* with mounds *m* between them having flatted off central portions *z*.

The construction of the raft perhaps can best be understood from an inspection of FIGS. 4 and 5. It should be understood that the raft is formed in a female mold, and the surface configuration of the mold forms the tread portions **15'** and the portions **16**, **17** and **18**. In forming the raft a polyester gel coat **19** (see FIG. 5) in the nature of .012–.020" in thickness is first sprayed into the mold cavity and forms the outer exterior surface of the top **11** and side **12**. Then a fibre glass and resin layer **20** approximately ⅛" in thickness is sprayed into the cavity and forms an immediately underneath layer. The resin may be a suitable commercial polyester with a setting catalyst. The next step involves inserting pie-shaped plywood pieces about ¾" in thickness in the mold to form rigid core sections. As FIG. 4 indicates the pie-shaped plywood members **21** are disposed in slightly spaced apart relationship as at **22**, and do not fully meet at their radially inner ends. The segment members **21** may extend radially inwardly about the same distance as do the portions **15** shown in FIGS. 1 and 2 and, in fact, may be the same shape as the portions **15** shown in FIG. 2.

The inner ends of the plywood segments **21** are joined together by a plywood block **22** about ¾" in thickness which is simply laid over them. Then finally a finish fibre glass resin coating **22***a* about 1/16" in thickness is sprayed over the interior of the raft and when set anchors the block **22** to the segments **21** to provide a unitary core structure. The spaces between segments **21** do not completely fill with resin and grooves **22***b* remain. Because the pie-shaped plywood sections **21** do not extend all the way to the center of the raft a space **23** is left between them (see FIG. 5), and this space accommodates a nut **24** which secures an eye bolt **25** in position. The eye bolt **25** forms a ring to which an anchor chain may be secured in any suitable manner.

The space **23** also provides a passage communicating with an opening **26** extending through coatings **19**, **20** and **22***a* and block **22**. A normally closed conventional, depressible stem, tire valve **27** selectively communicates the air chamber or space **13** with the exterior atmosphere. The valve may be a conventional Shrader valve of the type used on vehicle tires or could be any other suitable valve. The opening **26** is preferably of a size to snugly receive the valve **27** which preferably is slightly recessed in the opening **26** so that the accessible, depressible stem thereof lies slightly below the surface **17** of the raft.

The plywood segments **21** are slightly spaced apart as at **22** because it is highly desirable to provide a crown or slope to the supper surface **11** of the raft to permit water to drain off. It would not be possible to provide such a crown with a circular core.

Once the raft is formed and placed in the water as shown in FIG. 3, it may be vacuum locked in position in a manner in which will now be described. The top of the raft is loaded as, for example, by placing sand bags on it to cause it to sink lower into the water, and this has the effect of compressing the air in chamber **13** so that it now assumes a pressure greater than atmospheric pressure. If the stem of the valve **27** is now depressed by a person sitting on the raft, air may be evacuated from the chamber **13** to the desired degree. Then, when the sand bags or other weights are removed, the raft raises in

accordance with the amount of air which has been removed so that the air in chamber **13** is now below atmospheric pressure and the raft accordingly is vacuum locked in position. The height of the raft in the water may be varied with the amount of air which is removed in this way, and by vacuum locking the raft to the water a great stability is provided which permits diving from the raft without displacing it. The stability further permits boarding of the raft as with a ladder anchored to the side thereof without any chance of tipping the raft. The raft is described in the appended claims.

I claim:

1. A buoyant body floating in water comprising: a top; means forming a buoyancy providing perimetral section below the top and immersed in the water; said body including a wall bounding a closed inner air chamber between the water and top; and normally closed opening means normally closed to prevent air flow between said chamber and the exterior atmosphere, but openable to open the chamber to the exterior atmosphere; the pressure in said chamber being substantially less than atmospheric, when the body is floating normally upright in the water without load, to vacuum lock the body to the water.

2. The combination defined in claim **1** in which said top has a non-skid tread surface thereon and the tread surface comprises a surface having cross-hatched grooves defining squares with raised flatted-off mounds.

3. A floating body comprising: a downwardly and outwardly sloping top; and a side wall including a generally perimetral skirt portion extending downwardly a substantial distance from the underside thereof to form the bottom of the side wall; said skirt in cross-section constituting a block of coated plastic foam having sufficient height and width to provide for floating the raft in unloaded condition with the top raised a substantial distance out of the water and the skirt substantially immersed in the water, said perimetral skirt being of a width to define a generally centrally symmetric-compartment of substantial size inward of said skirt under said top, and open at its bottom; said top having a configured non-skid tread surface, and outwardly and downwardly sloping narrow drain channels, depressed relative to the top of the tread surface, extending from a central portion of the top of the body to the perimetral edges thereof and separating the tread surface into sections.

4. The combination defined in claim **3** in which the tread surface comprises a surface having cross-hatched grooves defining squares with raised flatted off mounds.

5. The combination of claim **3** wherein said foam comprises a rigid plastic foam ring joined flush with the periphery of said top; said tread surface comprises grooves cross-hatched in the surface with flatted off mounds between said grooves; and said top comprises relatively closely spaced, segment shaped plywood core

sections covered on top by a hardened fibre glass and resin composition.

6. The combination defined in claim **5** in which the upper surface of said composition is covered by a finish plastic coating; said core sections are centrally joined by a plywood piece to provide a unitary structure; the underside of said core sections and piece are coated with a hardened fibre glass and resin composition to bind the piece and core sections together; and said composition binds said foam ring to said top.

7. The combination defined in claim **6** in which the inner ends of said core sections do not meet and a central space remains between them; a valve passage communicates said space with the air chamber formed under said top by the ring and the exterior of said top; a normally closed valve in said passage; an anchor ring mounts on said plywood piece, and anchor means in said central space locks it in position.

8. A floating body comprising: a top; and a side wall including a generally perimetral skirt portion extending downwardly a substantial distance from the underside thereof to form the bottom of the side wall; said skirt in cross-section constituting a block of coated plastic foam having sufficient height and width to provide for floating the raft in unloaded condition with the top raised a substantial distance out of the water and the skirt substantially immersed in the water; said perimetral skirt being of a width to define generally centrally symmetric compartment means of substantial size inward of said skirt under said top and open at the bottom; said compartment constituting a closed air chamber between the water and top when the raft is in the water; and normally closed opening means in said top, normally preventing air flow in either direction between said chamber and atmosphere, but openable to communicate said chamber with the exterior atmosphere.

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46—91; 272—1 B