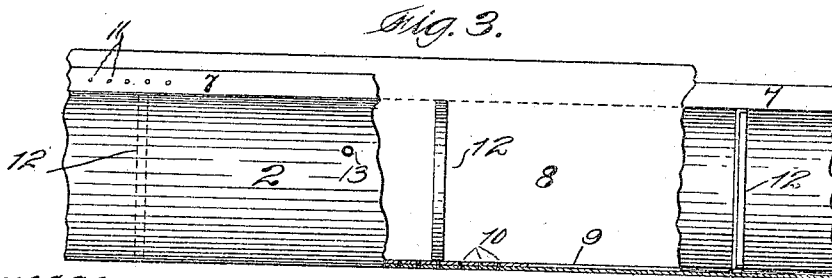
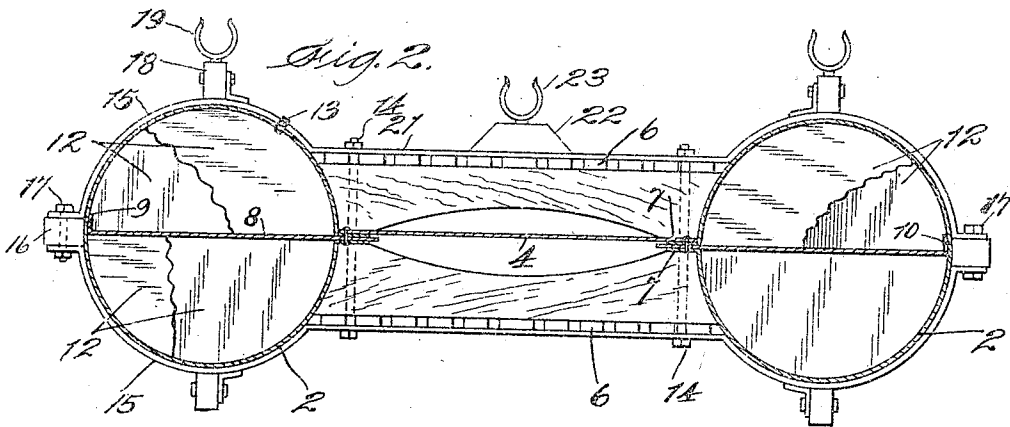
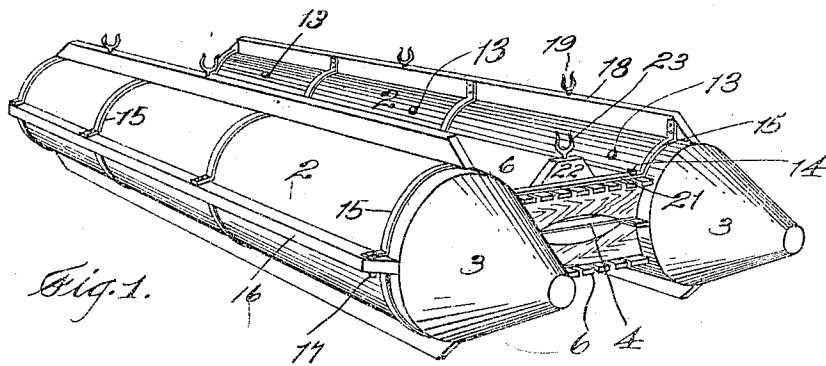


W. S. RAY.
LIFE RAFT.

APPLICATION FILED NOV. 8, 1909.

961,459.

Patented June 14, 1910.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM S. RAY, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO W. S. RAY MANUFACTURING CO., OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF CALIFORNIA.

LIFE-RAFT.

961,459.

Specification of Letters Patent. Patented June 14, 1910.

Application filed November 8, 1909. Serial No. 526,779.

To all whom it may concern:

Be it known that I, WILLIAM S. RAY, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Life-Rafts, of which the following is a specification.

This invention relates to life-saving apparatus, and pertains particularly to life-rafts.

Among the several objects of my invention, it is a particular purpose to provide a life-raft of superior strength; increased air compartments without increase in size; to provide a raft embodying peculiar structural features resulting advantageously in producing a raft affording greater safety to its passengers, and which is not liable to be rendered useless by leaks, has great resisting powers against crushing, and may be easily dismantled and assembled.

The invention consists of the combination of parts, and in details of construction as set forth in the specification and claims, and shown in the accompanying drawings, in which—

Figure 1 is a perspective view of the raft. Fig. 2 is a transverse section showing in detail the construction. Fig. 3 is a detail of the cylinder construction.

Heretofore it has been the practice to rivet or bolt the frame or platform of life rafts directly to the walls of the carrying cylinders, and I have found by investigation and experience that this riveting or bolting is the immediate source of dangerous and fatal leaks, because all of the twisting strain of the frame when buffeted by seas, or during launching, comes directly upon the holding rivets or bolts, and it is to remedy this serious defect that I have perfected a life-raft embodying my invention.

In the structure illustrated I employ air-tight cylinders 2 of suitable length and diameter, and having conical heads 3. These cylinders 2 are preferably disposed parallel, and rigidly braced by tie plates 4, and have suitably mounted upon them platforms or decks 6, the upper one of which is adapted to accommodate passengers. It is obvious that such a raft is equally serviceable in

whatever position it lies in the water, and with either side uppermost.

Attention is particularly drawn to the drawings which show the specific construction and features of the invention so important in apparatus of this class.

Each cylinder 2 is shown as formed of a single width of material rolled to shape and provided with outwardly bent flanges 7—7 extending the length of the cylinder. Between these flanges and projecting from outside, inwardly and across the horizontal diameter of the cylinder, is a sheet or bulkhead 8 secured along flange 9 by rivets 10 to the inner surface of the cylinder 2. The flanges 7—7 are also secured by rivets 11 upon each side of the projecting portion of the bulkhead 8, thus dividing the cylinder horizontally into two semi-cylindrical compartments which are again divided into a number of sub-compartments or chambers by transversely disposed semi-circular walls 12, of which any number may be employed, riveted or otherwise permanently secured to the bulkhead 8 and the inner surface of the cylinder 2. In this manner each cylinder is completely formed, and all joints and seams made air-tight by any suitable means and, preferably, is entirely galvanized; each compartment being provided with a plug 13 for purposes of testing.

When erecting the raft a pair of cylinders 2 is arranged in parallel order with the flanges 7—7 toward each other, and tied by means of the plates 4 which are riveted to the flanges 7—7 between which is secured the projection of the bulkhead 8. It will be observed that no tie-bolts or holding rivets puncture the walls of the cylinders. The decks 6 are then put in position and bolts 14 passed through them, and through the composite flanges 7—7, and metal straps 15 fastened to the upper and lower decks, and formed to fit snugly upon the cylinders 2, are bolted, as at 17, to fenders 16 which extend along the outer edge of each cylinder 2 to protect it from contact with the ship, and from indentation by flotsam. Such other attachments as are requisite may be secured either to the straps 15, or to the

decks 6; but in my invention there is not a single supporting bolt or rivet penetrating the shell of the cylinders which is subject to strain or twist, all of the securing bolts passing through the flanges 7—7.

When it is desired to paint or inspect the cylinders 2, it is only necessary to remove bolts 17 from the ends of the straps 15, and to remove bolts 14 which secure the decks 6 to the flanges 7—7. The decks are then free to be lifted or separated from the cylinders.

I have thus provided a simple, inexpensive life-raft embodying important details of construction, and of such inherent rigidity that bracing is not required. By doubling the number of compartments without increasing the size of the cylinders, it proportionately decreases the danger of rendering the raft useless by puncturing the compartments, and it is manifest that under the most extreme conditions, should the raft be wrecked and the decks torn from the cylinders, these would still be of much value as floats, since the bolts securing the parts do not penetrate the shell, but only the flanges thereof.

18 are gunwales or bars which are secured longitudinally upon the top and bottom of each cylinder, and which serve for the reception of rowlocks 19 by which the raft may be impelled in any direction. These bars may be secured to the bands 15 by angle iron strips, and may also be connected with the deck or body 6 of the raft by straps 21 extending across the decks, and either united to, or forming a part of the curved portions 15 which fit the cylinders, so that they may be readily dismounted when desired.

22 are elevated blocks fixed to each end of each of the decks, and adapted to receive rowlocks 23 which may be used for steering oars.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. A life-raft comprising parallel hollow cylinders each formed with parallel horizontal flanges along its inner side, a diaphragm extending horizontally across each of the cylinders and dividing the same into upper and lower compartments, said diaphragm extending through the inner side of the cylinder between the horizontal flanges of the latter, and secured to said flanges, and connections between the cylinders.

2. The combination in a life-raft of airtight cylinders composed of continuous single sheets with edges flanged and extending outwardly along the inner sides of the cylinders, horizontal diaphragms in the cylinders having side edges extending between said flanges, and secured thereto, decks between opposite cylinders, and bolts passing through the decks and said flanges.

3. The combination in a life-raft of cylinders composed of single sheets of metal bent to form, having contiguous edges with integral flanges projecting parallel with each other, and means engaging the flanges to secure a deck frame between said flanges.

4. The combination in a life-raft, of spaced cylinders each formed of single sheets of metal with the contiguous edges disposed along the inner side of the cylinder and outwardly flanged, the flanges of one cylinder projecting toward those of the opposite cylinder, and an intermediate deck frame bolted to said flanges.

5. The combination in a life raft, of cylindrical floats each formed of continuous sheets with the adjacent edges turned outwardly to form horizontal flanges along the inner sides of the floats, a horizontal diaphragm secured in and dividing each float into upper and lower compartments, said diaphragm having one edge extended through the inner side of the float and between the flanges thereof, and tie plates secured to and uniting the flanges of opposite floats.

6. The combination in a life-raft, of cylinders formed of continuous sheets of metal having outwardly projecting parallel flanges, a diaphragm sheet, one edge of which lies between the flanges, the opposite edge having a flange bent to fit against and be secured to the opposite interior side of the cylinder, and bolts by which the projecting edge of the sheet and the flanges are secured together.

7. The combination in a life-raft, of cylinders formed of continuous single sheets having inwardly turned parallel flanges, a diaphragm, one edge of which lies between the flanges, the opposite edge fitting and being secured to the opposite inner side of the cylinder, said cylinders having conical ends and transverse partitions at right angles with the diaphragm.

8. The combination in a life-raft, of a pair of substantially parallel cylinders formed of single continuous sheets having outwardly turned parallel flanges, and flat diaphragms secured across the cylinders with the outer edges projecting between the flanges, a deck portion, and means by which opposite edges of said deck are removably secured to the flanges and the cylinders.

9. The combination in a life-raft, of independent cylinders formed of single continuous sheets, with contiguous edges bent to form integral, parallel, outwardly turned flanges, bracing tie plates extending between the cylinders and fixed to the flanges, decks supported from the flanges, bands inclosing the cylinders, and fenders secured to the bands.

10. The combination in a life-raft, of a

pair of independent cylinders formed of
single continuous sheets of metal having
parallel and contiguous flanges, which are
integral with the sheets, distance plates fixed
5 between the flanges, decks extending be-
tween the adjacent sides of the cylinders,
bands extending across the decks inclosing
the cylinders and bolted through the decks
and flanges, said bands having fastening
means on the outer ends, and fenders secured 10
thereto.

In testimony whereof I have hereunto set
my hand in the presence of two subscribing
witnesses.

WILLIAM S. RAY.

Witnesses:

H. E. PENNER,
J. V. HALL.