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J. EWING, Jr.

COLLAPSIBLE PART FOR BOATS.

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NO MODEL.

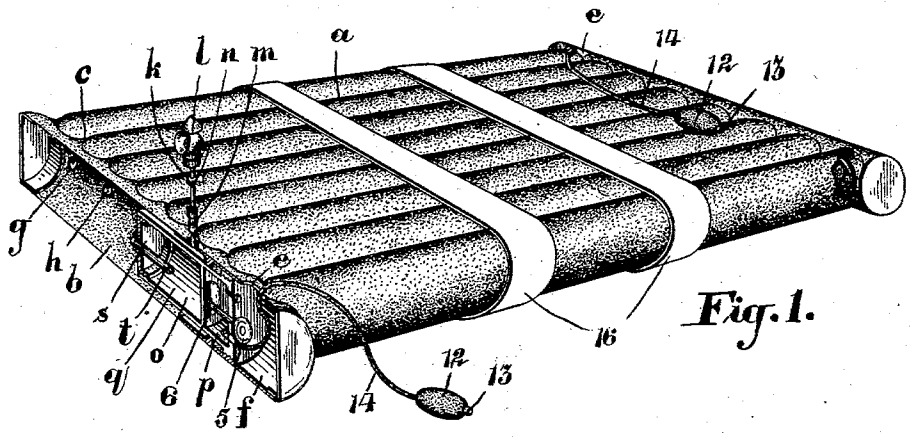


Fig. 1.

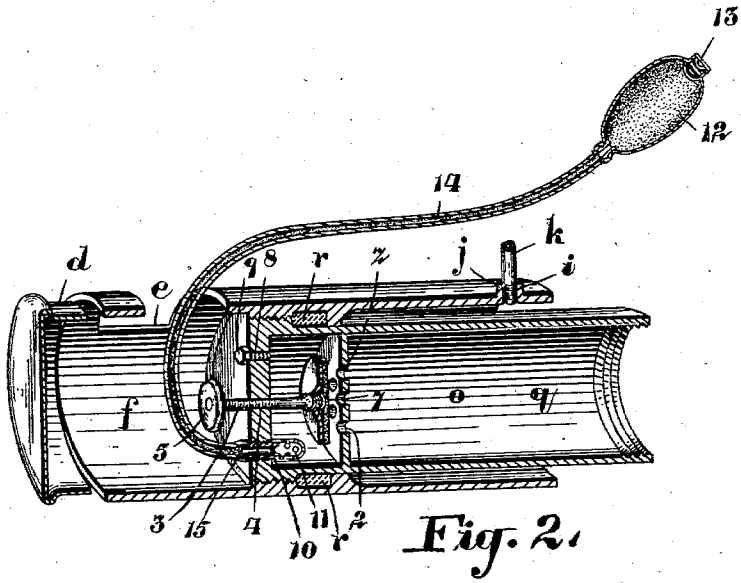


Fig. 2.

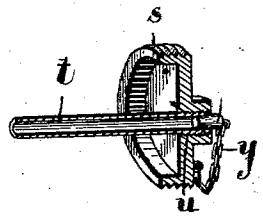


Fig. 3.

Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN EWING, JR., OF RICHMOND, CANADA.

COLLAPSIBLE PART FOR BOATS.

SPECIFICATION forming part of Letters Patent No. 746,940, dated December 15, 1903.

Application filed February 7, 1903. Serial No. 142,413. (No model.)

To all whom it may concern:

Be it known that I, JOHN EWING, Jr., a subject of the King of Great Britain, residing at Richmond, in the county of Richmond, Province of Quebec, Canada, have invented certain new and useful Improvements in Collapsible Parts for Boats and the Like, of which the following is a specification.

My invention relates to improvements in collapsible parts for boats and the like; and the object of the invention is to provide an inflatable part which shall make the boat or raft, as the case may be, practically unsinkable, and thus assure to the occupants a maximum of safety, and whereby an economy of space will be effected in the stowage of life-saving apparatus on shipboard; and it consists, essentially, of one or more elongated tubes, preferably of rubber or rubber-filled material, suitably secured together or to a boat, a casing located within or adjacent to the said tubes and containing a gas-generating chamber, and a suitable air or water pump connected to the casing and communicating with the interior thereof, the various parts being constructed in detail, as hereinafter more particularly described.

Figure 1 is a perspective view of a plurality of the elongated tubes in the form of a raft. Fig. 2 is an enlarged view of the generator-casing containing a constituent chamber within an outer casing and the bulb pump. Fig. 3 is a sectional perspective view of the removable cover for one end of the generator-casing.

Like characters of reference indicate corresponding parts in each figure.

a represents the main tubes, preferably made of rubber or rubber-filled material, such as heavy canvas or duck, and shown in Fig. 1 in the form of a rectangular raft.

b represents the gas-distributing tubes, having the projections *c* from the side thereof.

The main tubes *a* are securely attached to the projections *c* by vulcanizing or other suitable process. The gas-distributing tubes *b* have one end of each permanently closed and the other end provided with the removable cover *d*.

e represents openings in the periphery of the outer casings *f*, surrounding the gas-distributing tubes *b*, adjacent to the cover *d*. The outer casings *f* are threaded for a portion of their inner periphery.

g represents communicating passages from the gas-distributing tubes *b* to the interior of the main tubes *a*, and *h* are controlling-valves in the said passages designed to prevent the return of gas or air after entering the main tubes *a*.

i is an orifice in the top side of one of the gas-distributing tubes *b*, and *j* is an upwardly-projecting flange surrounding the said orifice. *k* is a pipe rising from the said orifice and having the correspondingly-threaded end to the flange.

l is a gas-lamp surmounting the pipe *k* and designed to receive a supply of gas from the gas-distributing tubes *b* through the pipe *k*.

m is a valve controlling the passage of gas through the orifice *i*, being less sensitive than the valves *h*.

n is a stop-cock located in the pipe *k* above the valve *n* and designed to cut off the supply of gas to the lamp.

o is a casing containing the chambers *p* and *q* and when used in a raft is designed to be inserted securely in each of the gas-distributing tubes *b* against the rubber washer *r*, thus rendering inside the casing *o* gas-tight.

s is a removable cover for the casing *o*, and *t* is an exhaust-pipe leading from about the middle of the casing *o* through an orifice *u* in the cover *s*. The inner end of the pipe *t* will thus be clear of the casing *o*.

v is a stopper attached to the cover *s* by the chain *y* and is designed to block up the outer end of the pipe *t*.

z is a partition dividing the casing *o* into the chambers *p* and *q* and having the orifices 2 therethrough.

3 is a threaded spindle designed to turn in a correspondingly-threaded orifice 4 in the head of the casing *o* and having the hand-wheel 5 or a suitable hand-lever on the outer end thereof and carrying at its inner end the disk 6, provided with a rubber-covered face 7, designed to abut the partition *z* over the orifices 2.

8 is an air-vent having a suitable plug 9.

10 is an inlet-orifice through the head of the casing *o*, having a protecting perforated shield 11 inside the casing.

12 is a rubber bulb having an inlet-valve 13 at its extreme end. 14 is a tube attached to the other end of the bulb 12 and also to the projecting flange 15 through the orifice 10.

The bulb 12 is designed to force water or air through the orifice 10, and it must here be understood that any other suitable form of air or water pump may be used without departing from the spirit of my invention.

In the foregoing description of the raft I have placed the generator-casings diagonally opposite one to the other in the corners of the raft, and this will be found to produce the best result in the inflation of the various tubes.

In order to secure greater strength in the raft, I have provided the bands 16, which embrace all the tubes and hold them firmly together. These bands may be made of any suitable material, but preferably heavier than that of the tubes.

Having now particularly described the various parts involved in my invention in detail, I shall now explain the operation and utility thereof.

In the raft the casings *o* are removed from the tubes *b* and a charge, preferably of calcium of carbid, placed in each of the chambers *q*. The wheel-handle 5 on the threaded spindle is then turned so as to force the rubber face 7 of the disk up against the partition *z* and cover the orifices 2 therethrough. The stopper *v* is also put in at the outside end of the exhaust-pipe *t*. This will render the chamber *q* free from all external influences, thereby insuring the good condition of the carbid. The chambers *p*, divided as they are from the chambers *q*, are designed to be water-tight, and at all times when the apparatus is loaded and ready for use these chambers will be full of water pumped in by means of the bulb 12 or other suitable water-pump. The casings *o* are then returned to the tubes *b* diagonally opposite one to the other toward the corners of the raft, leaving a space at each end of the tubes as depositories for the various parts when the raft is not in use. These spaces may be reached through the openings *e*, which may or may not have a temporary cover. The raft now is ready, and in order to prepare for immediate use the bulb, lamp, and other articles are removed from the depositories at the corners and secured in place, the bulbs on top of the raft and the lamp secured to the orifice in the tubes, as described in the foregoing. The raft then in its collapsed state may be transported with ease from one place to the other. For instance, during a disaster at sea the swamping of a life-boat is a very common occurrence, and it will readily be seen that such a raft could be carried therein without difficulty and inflated instantly, if desired.

In the event of any failure through neglect of charging with carbid the tubes may be readily inflated with air by the bulb or other form of pump attached to tube 14. This will soon inflate the collapsed tubes, though not so readily as by the generating of gas.

The shield will tend to prevent the choking of tubes with sediment of carbid. The exhaust-pipe *t*, extending as it does from about the center of the inner cover *s* into the middle of the casing, will also to a large extent prevent the forcing of the sediment of carbid and the water into the tubes *b*, thus permitting only gas to exhaust from the chambers *q* into the said chambers, the said gas forcing its way through the valves *h* into the various tubes *a*, the said valves *h* preventing the exhaust from said tubes *a*.

The valve controlling the supply of gas to the lamp is not nearly so sensitive as the valves leading into the various tubes. Therefore the tubes will be inflated first, and subsequent to that a supply of gas will be allowed to flow to the burner after the opening of the gas-cock.

The gas may be lighted in any suitable manner, or a suitable automatic means of lighting it may be provided.

The heat generated in the formation of acetylene gas is an important feature in this invention, for where shipwrecked people are hurried into life-boats usually many of them die from exposure to cold, and where these tubes are provided, as they may be both inside and outside the boat, the heat thus obtained naturally helps to sustain life.

What I claim as my invention is—

1. In a device of the class described, the combination with a raft formed of a plurality of collapsible gas-tight tubes, of a gas-distributing tube firmly secured to the ends and having communicating passages into each and every tube, a gas-generator located toward one end of the distributing-tube, and forming the gas-tight stopper for the said end, a water-receptacle, and means for pumping the water to the receptacle, as and for the purpose specified.

2. In a device of the class described, the combination with a raft formed of a plurality of collapsible gas-tight tubes, of a distributing-tube firmly secured to the ends and having communicating passages into each and every tube, and a removable cover on one of its ends, a constitutent receptacle inserted into the interior of the distributing-tube in proximity to the removable cover, and designed to form a gas-tight stopper for the tube, a hollow bulb suitably connected to the constituent receptacle and communicating therewith, and a gas-lamp rising from the distributing-tube, as and for the purpose specified.

3. In a device of the class described, the combination with a raft formed of a plurality of gas-tight tubes securely attached to a distributing-tube, and having communicating passages thereinto, of a gas-generator designed to form a gas-tight stopper in one end of the distributing-tube, and having a removable inner cover provided with a suitable exhaust-orifice, and a water-receptacle suit-

ably attached to the outer end of the generator, as and for the purpose specified.

4. In a device of the class described, the combination with a raft formed of a plurality of gas-tight tubes securely attached to a distributing-tube and having communicating passages thereinto, of a gas-generator located within the distributing-tube, and having its inner end removable, and orifices through the outer and inner ends, an exhaust-pipe from the said generator inserted through an orifice in the inner end, and having a suitable stopper outside the generator-casing, a water-receptacle connected to the generator-casing and means attached to the receptacle for filling the same with water, as and for the purpose specified.

5. In a device of the class described, the combination with a raft formed of a plurality of gas-tight tubes securely attached to a distributing-tube and having communicating passages thereinto, of a gas-generator designed to form a gas-tight stopper for one end of the distributing-tube, and having an open end, and a suitable cover therefor, and orifices through the closed end and the said cover, a perforated shield located inside the generator-casing, and designed to protect the orifice in the closed end, an exhaust-pipe inserted into the orifice in the cover and extending inwardly into the casing, and having its inner end free from the sides thereof, and a bulb having a suitable valve at its top end, and a tube connecting the bulb with the orifice in the outer end of the generator, as and for the purpose specified.

6. In a device of the class described, in combination, a raft formed of a plurality of elongated inflatable tubes, one or more bands designed to hold the inflatable tubes securely together, a laterally-arranged tube at each end of the said elongated tubes and securely attached thereto, and having communicating passages into the said elongated tubes, an inner casing arranged in each of the lateral tubes diagonally opposite one to the other, and having suitable inlet and exhaust orifices, and a removable cover at one end, and hollow rubber bulbs provided with valves at the extreme ends thereof, and flexible tubes connecting the said bulbs with the inner orifice to the casing, as and for the purpose specified.

7. In a device of the class described, in combination, a raft formed of a plurality of elongated inflatable tubes, one or more bands designed to hold the inflatable tubes securely together, a laterally-arranged tube at each end of the said elongated tubes and securely attached thereto, and having communicating passages into the said elongated tubes, an inner casing arranged in each of the lateral tubes diagonally opposite one to the other, and having suitable inlet and exhaust orifices, and a removable cover at one end, and hollow rubber bulbs provided with valves at the extreme ends thereof, flexible tubes connecting the said bulbs with the inner orifice to the casing, and a gas-lamp rising from the lateral tubes and having a suitable stop-cock, as and for the purpose specified.

8. In a device of the class described, in combination, a raft formed of a plurality of elongated inflatable tubes, a laterally-arranged tube securely attached to each end thereof, having an orifice through the outer periphery and communicating passages to the elongated tubes, controlling-valves located in said passages in the elongated tubes, and a controlling-valve therein designed to be less sensitive than the aforesaid valves, a pipe rising from each of the aforesaid orifices, an inner casing located in each of the lateral tubes toward the ends diagonally opposite, and having suitable inlet and exhaust orifices, a water-receptacle, a pump, and a tube designed to connect the said water-receptacle with the pump, as and for the purpose specified.

9. In a device of the class described, the combination with a float having a suitable opening into the interior thereof, and a gas-generator therein contained provided with a water-receptacle, and means for pumping water to the receptacle, of collapsible gas-tight tubes having suitable communicating passages to the gas-generating device in the float, and a plurality of straps or bands holding the collapsible tubes together, as and for the purpose specified.

10. In a device of the class described, in combination, a float having a suitable opening into the interior thereof, a cylindrical casing closed at one end, a removable cover at the other end thereof, a perforated partition-wall in the interior thereof, a threaded spindle inserted in a correspondingly-threaded orifice in the closed head of the casing, carrying at its outer end a suitable handle, and at its inner end a disk for covering the aforesaid perforations, an exhaust-pipe projecting inwardly from an orifice in the removable cover, a compressible bulb having a valve at one end thereof, a flexible tube to connect the said bulb from its other end to the casing, and a collapsible gas-tight tube having communicating passages to the cylindrical casing, and suitably attached to the float, as and for the purpose specified.

Signed at Richmond, in the district of St. Francis, in the Province of Quebec, Canada, this 4th day of February, 1903.

JOHN EWING, JR.

Witnesses:
H. C. FRASER,
J. R. DENISON.