

(No Model.)

2 Sheets—Sheet 1.

G. A. RUSSELL.
DIVING CHAMBER.

No. 544,238.

Patented Aug. 6, 1895.

Fig. 1

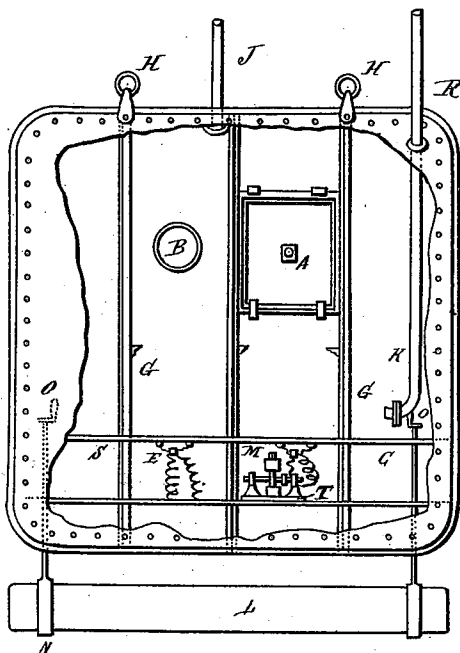
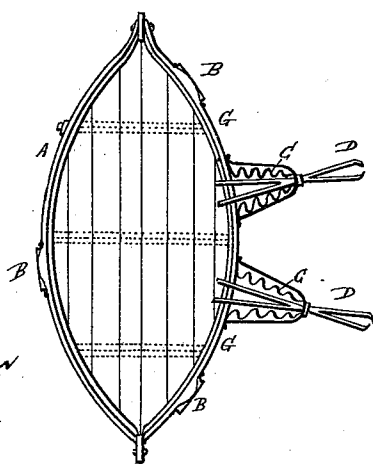
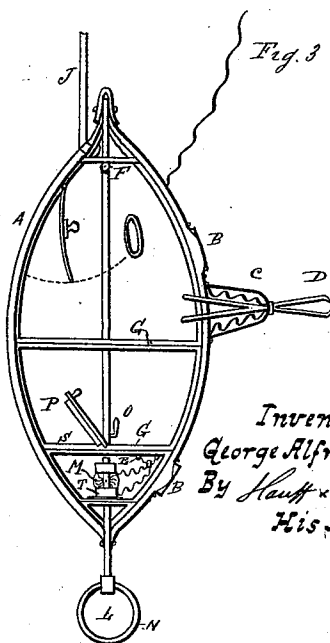


Fig. 2



Witnesses
William Miller
E. Wolff.

Fig. 3



Inventor
George Alfred Russell
By Haupt & Haupt
His Attorneys

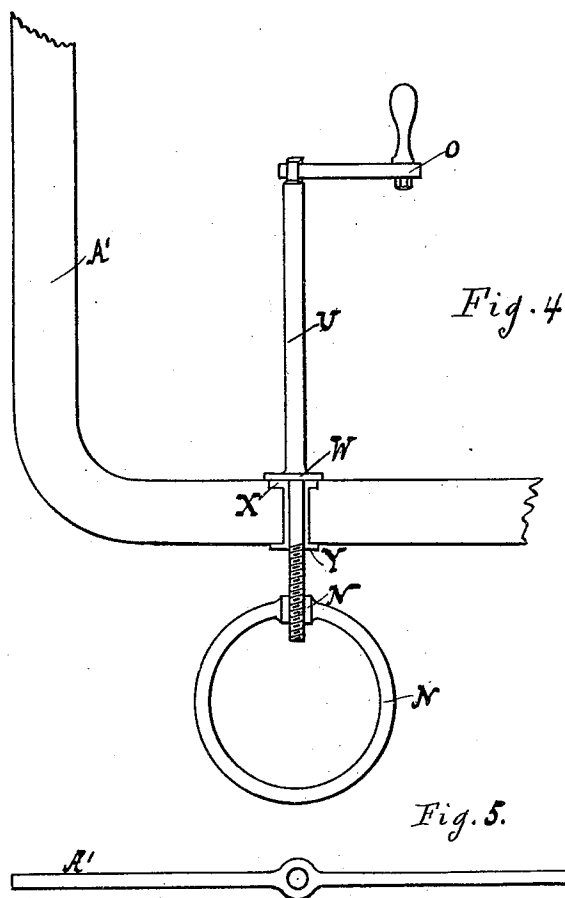
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UNITED STATES PATENT OFFICE.

GEORGE ALFRED RUSSELL, OF NEWPORT, ENGLAND.

DIVING-CHAMBER.

SPECIFICATION forming part of Letters Patent No. 544,238, dated August 6, 1895.

Application filed April 4, 1895. Serial No. 544,492. (No model.)

To all whom it may concern:

Be it known that I, GEORGE ALFRED RUSSELL, a subject of the Queen of Great Britain, residing at 10 Power Street, Newport, in the county of Monmouth, England, have invented certain Improvements in Diving-Chambers, of which the following is a specification.

My invention relates to certain improvements in diving-chambers made of iron or steel plates firmly riveted, and so arranged as to resist enormous pressures when at great depths.

The invention consists in certain novel details of construction; and the object of the invention is to provide an apparatus which can be readily controlled and manipulated, and which will offer the least possible resistance.

In order that my invention may be more clearly understood I refer to the annexed drawings, in which—

Figure I is a longitudinal section of my diving-chamber. Fig. II is the plan, and Fig. III is a transverse section. Fig. IV is a detail view enlarged of part of the apparatus. Fig. V is a plan of part of the keel, showing a hole forged through to permit the passage and packing of one of the weight-holding bolts.

In all the figures the same letters of reference correspond to the same parts.

A is a door situated near the top of the chamber. A small rabbet is placed on the door with india-rubber packing similar to the disposition of a port-hole on board ship to make it water-tight. This is to be provided with suitable thumb-screws on the inside, so that the operators can open and close the door at will.

The port-holes B are to be similar to those on board ship, four of which are to be in front and one at the back to permit of looking out, as seen in the drawings. Two others are also placed in front under the floor to permit of projecting the electric rays on outside objects.

C C are india-rubber bag-joints of good thickness securely fixed to the outside of the chamber with proper collars, nuts, and bolts. Into these bag-joints long tongs D D or other tools, as required, are to be inserted, the ends

of which stick out of the bag-joints, as shown in Figs. II and III.

G G are the angle-iron bearers, stays, and frames.

H H are the loop-rings fixed on the top of the diving-chamber for connecting the wire ropes for ascending or descending.

J is an exhaust-pipe to draw out all foul air which may accumulate in the chamber while operating. This and the fresh-air pipe K are firmly attached with bolts inside and have stop-valves, allowing the operator to open or close them at will.

S is a wooden floor laid on the angle-irons and separates the working chamber from the electrical store.

T is the bottom floor or shelf disposed to fasten the dynamo or accumulators on and so prevent their rolling out of place.

E E are the electric lamps fixed under the floor S, and are to be covered on the back and sides with reflectors, thus throwing the rays of light through the port-holes onto the object outside.

F is a brush-light fixed inside at the top of the chamber.

P is a trap-door formed in the floor through which access is gained to the electrical store.

R is a telephone apparatus, shown with mouthpiece inside the chamber, so that the operators could give immediate orders to the attendant ship on the surface.

M is the electrical dynamo or accumulators, if desired.

L is the load, fastened at its ends by straps N or other suitable means, in which are screwed the long bolts ended at the inside of the chamber by handles O, the whole to be painted well, calked, and made perfectly water-tight.

The diving-chamber works as follows: Before being sunk it is to be ballasted well, so that it will float upright on the water, similar to a buoy. Then it is to be hoisted up and the load attached, which is to be calculated so as to be sufficient to sink it down into deep places. The operators enter the diving-chamber by the door A, which they close behind them. Then the chamber is plunged into the water and the operators, looking out through the port-holes, can seize the outside objects with the tools inserted in

the bag-joints C. When it is desired, they can by telephoning be lifted to the surface of the water by means of wire ropes, or if prevented by accident either from communicating or from being lifted, they could by turning the handles O slip the load, and consequently the diving-chamber thus freed would rise by itself to the surface.

In Fig. IV is shown a portion of the keel or rim A' of the chamber, said chamber being made to diminish or taper from its center or bulged portion toward the rim, so that the chamber presents the least possible resistance to being sunk or raised, as also against currents or tides against which the surrounding or sharp rim of the chamber can be presented so that the device can be readily moved or held in place. The bolt U, actuated by the handle O, rests its collar or flange W on a packing or bushing X, secured or flanged at Y against displacement, and the bolt U has a screw-thread engaging its ring N. These rings N carrying the load L, such as old railway-rails or the like ballast, can be readily freed by proper rotation of bolts U by handles O.

The india-rubber or flexible bags or joints having the spiral springs inserted to counterbalance the pressure of water from the outside enable the graspers or tongues D to be easily manipulated.

The electric lights being arranged under the floor S are protected and leave the upper part of the chamber in darkness, so that the occupants of the chamber are not blinded

and can properly distinguish outer objects illuminated by the light shining through a port B under the floor S.

Having now particularly described the nature of my said invention and in what manner the same is to be performed, what I desire to claim and secure by Letters Patent is—

1. A hermetically sealed or closed diving chamber having its walls made of steel or the like, and having its center part bulged or enlarged and made to taper or contract from the center to the edge or rim, said edge or rim being sharp or contracted about the entire exterior of the chamber, substantially as described.

2. A diving chamber having a surrounding sharp rim or edge provided with perforations, bolts made to extend through said perforations, a flanged packing tube or bushing in said perforations, and weight carrying rings, said rings and bolts being screw threaded for detachably engaging one another, substantially as described.

3. A diving chamber provided with an opening and a flexible bag or hood tightly secured about the opening, a grasper made to extend centrally through the hood, and distending springs for the hood placed on each side of the grasper and braced against the chamber wall, substantially as described.

GEORGE ALFRED RUSSELL.

Witnesses:

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CHARLES J. FOX.