

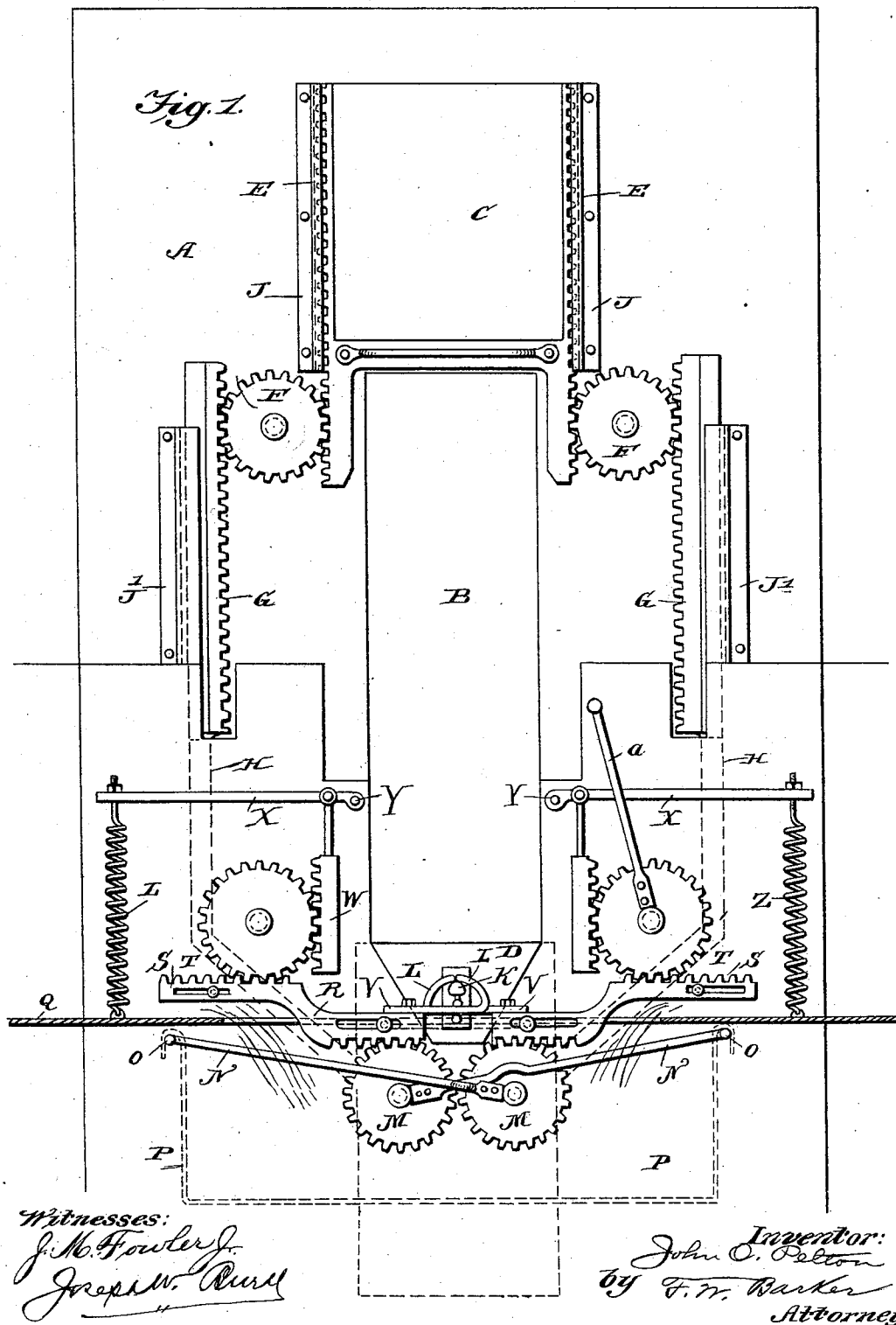
(No Model.)

2 Sheets—Sheet 1.

J. O. PELTON.
WATER TIGHT BULKHEAD DOOR.

No. 575,005.

Patented Jan. 12, 1897.



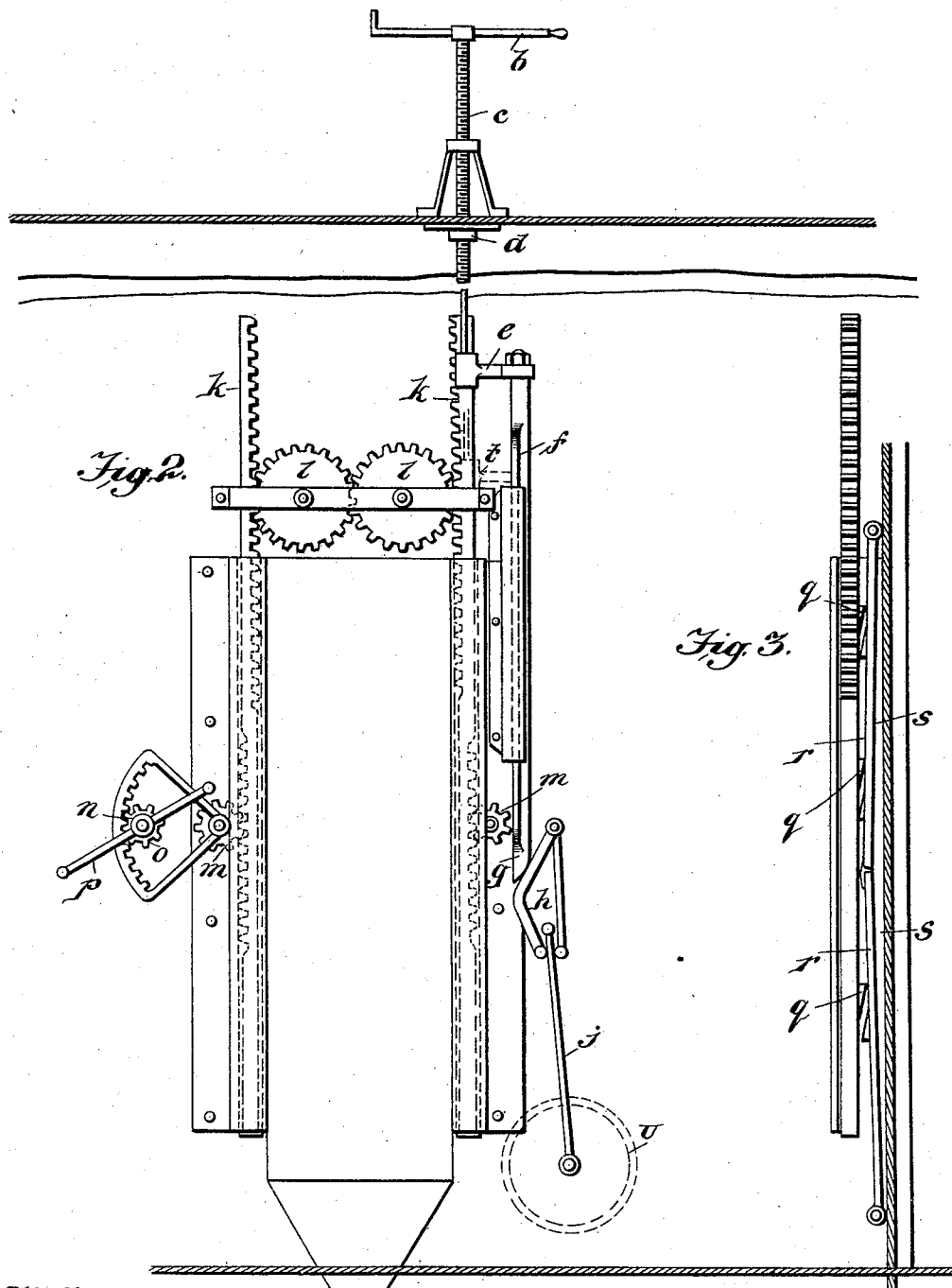
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Witnesses:

J. M. Fowler
Joseph M. Burrell

Inventor:

John O. Pelton
by *F. W. Barker*
Attorney:

UNITED STATES PATENT OFFICE.

JOHN OLLIS PELTON, OF CROYDON, ENGLAND.

WATER-TIGHT BULKHEAD-DOOR.

SPECIFICATION forming part of Letters Patent No. 575,005, dated January 12, 1897.

Application filed March 22, 1895. Serial No. 542,806. (No model.)

To all whom it may concern:

Be it known that I, JOHN OLLIS PELTON, a subject of the Queen of Great Britain and Ireland, residing at 40 High Street, Croydon, in the county of Surrey, England, have invented certain new and useful Improvements in Water-Tight Doors or Valves, of which the following is a full, clear, and exact specification.

The objects of my invention are to provide mechanism for automatically closing doors or valves, such as water-tight doors of ships' bulkheads or similar appliances, and to prevent the filling of more than one compartment caused by collision, running on rocks, or damage in action in the case of ships of war.

Referring to the drawings which form a part of this specification, Figure 1 is an elevation of the bulkhead of a ship, showing the opening or entrance and the automatic gearing for actuating the doors for closing the bulkheads. Fig. 2 represents an elevation of the gearing for hermetically fastening the doors when closed, Fig. 3 being a sectional view of the wedges which are brought into action for the purpose of hermetically securing said doors.

Similar letters refer to similar parts throughout the several views.

The bulkhead A has in its side the opening or entrance B. Sliding upon the face of this bulkhead are two doors, an upper door C and a lower door D, which move simultaneously by means of gearing to be hereinafter described. These doors are so weighted that the upper door is sufficiently heavy when released from its upper position to descend and pull the lower door up to meet it at the middle of the entrance. This upper door C has attached to each of its sides a rack E E, each of which gears into a toothed wheel F F, revolving on a pin attached to the bulkhead-plates. Each of these toothed wheels has also gearing into it another rack G G, the lower ends of which are continued by a bar H H in an oblique direction to the lower sliding door D, to which it is attached. These racks slide in guides J J J J, fixed to the bulkhead-plates. It is obvious that by means of these racks the upper and lower doors

move simultaneously one with the other. Attached to the upper end of the lower door is a hinged projecting lug K, arranged so as to be free to move only in an upward direction, so that when the lower door is falling the lug turns upward when passing the hooks L L and then drops under them, becoming rigid, thus keeping the lower door secure in its lowest position.

Underneath the opening or entrance and the floor of the bulkhead-compartment are two other toothed wheels M M, also revolving on pins fixed to frames attached to the bulkhead-plates. These toothed wheels gear one into the other, and each has a long lever N N fixed to its side and extending from the center of the wheel to a considerable distance beyond and having its outer end bent at right angles to the bulkhead at O O. These levers are placed in an opposite direction to each other and cross each other between the toothed wheels. Suspended between the right-angle projecting arms of these levers is an open-top tank or cistern P immediately under the bulkhead-floor. This floor Q has an opening R in it of convenient size and shape, so that any water entering the compartment immediately falls into the open tank underneath.

S S are two horizontal racks, the teeth on the inner ends being geared into the toothed wheels M M and the teeth at the outer ends and on the upper side thereof at T T being geared into other toothed wheels U U. Each of these horizontal racks has attached to its inner end a hooked bar V, each having a hook L, which hooks over the projecting lug K and holds that and the doors in open position. The hooks thus locked are held under spring-tension by tension devices which consist of a train of mechanism described as follows:

The toothed wheels U U each mesh with a vertical rack W, sliding on the frame attached to the bulkhead and attached to a horizontal lever X, centered at Y, and held down by the long spring Z. This long spring may be substituted by weights, if preferred. When the tank or cistern P becomes filled with water, which by any accident enters the compartment, the weight of the water moves the levers N N, overcoming the resistance of the

long springs *Z Z*, and causes the hooked bars *V V* to release the hinged lug on the lower door, when the doors immediately and automatically close in the manner hereinbefore mentioned. *a* represents a hand-lever fixed to either one or both of the toothed wheels *U U*, by means of which the doors can be closed by hand from the bulkhead-floor independently of the action of the suspended tank.

In Fig. 2 is shown a modified arrangement for closing the doors from the upper deck by means of a handle *b* and screw *c*, working in a nut *d*. Attached to the lower end of the screw *c* is a horizontal lever *e*, with a long vertical attachment-bar *f*, having a cam end at *g*. When on turning the screw *c* this bar is lowered, it comes into contact with the forked lever *h*, which embraces a lever *j*, attached to the toothed wheel *U*, in Fig. 1, and thus actuates the gearing and releases the doors in the same way as the hand-lever *a*.

The doors are closed by means of vertical racks *k k*, each of which acts simultaneously by means of intermeshed toothed wheels *l l*. Each rack is actuated by a toothed pinion *m*, to which is attached a segment-rack *n*, meshing with a pinion *o*, and having a handle *p*. The under sides of each of the racks *k k* is provided with wedge-pieces, (shown at *q q*, Fig. 3,) so arranged that when the rack is caused to descend the said wedge-pieces grip reverse wedges on the hinged frames *r r*, Fig. 3, which frames are placed in the side frames of the automatic doors, and thus the doors are wedged in their places when closed. Strips of india-rubber or other suitable material are fixed on the inner edge of the hinged frames at *s s* to insure a perfectly water-tight fit.

The doors may be sealed from the upper deck by turning the handle *b* and screw *c* still farther until the horizontal lever *e* comes down to and bears upon the top of the rack-frame, as shown at *t*, and, continuing, forces the racks down until the doors are sealed.

The handles *p* and segment-rack *n* may be placed on either or both sides of the bulkhead, so that the doors may be actuated either

inside or outside the bulkhead-compartment, or both sides of same.

By an ordinary arrangement of electric apparatus the fact of the water-tight doors being closed may be communicated by the ringing of an electric bell on the upper deck or any other convenient place.

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

1. In an automatic water-tight door for bulkheads the combination with a pair of traveling door members that are adapted to be reciprocally opened and closed by means of traveling racks and engaging pinions which are in operative connection therewith, means for holding said doors in open normal position, that consists of tension devices engaging with said rack mechanism and a locking device controlled by said tension devices and an independent disengaging means for automatically releasing said doors thus held, which is actuated by the weight of a volume of water directed thereon, substantially as described.

2. In an automatic water-tight door for bulkheads the combination with a pair of vertically-traveling door members, that are adapted to be reciprocally raised and lowered by means of vertically-traveling racks and engaging pinions which are in operative connection therewith, means for holding said doors in open normal position, that consists of oppositely-disposed tension devices engaging with said rack mechanism and a locking device controlled by said devices and disengaging means for automatically releasing said doors thus held which is actuated by the weight of water flowing thereon, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 15th day of February, 1895.

JOHN OLLIS PELTON.

Witnesses:

REGINALD WALTER BARKER,
H. G. BISHOP.