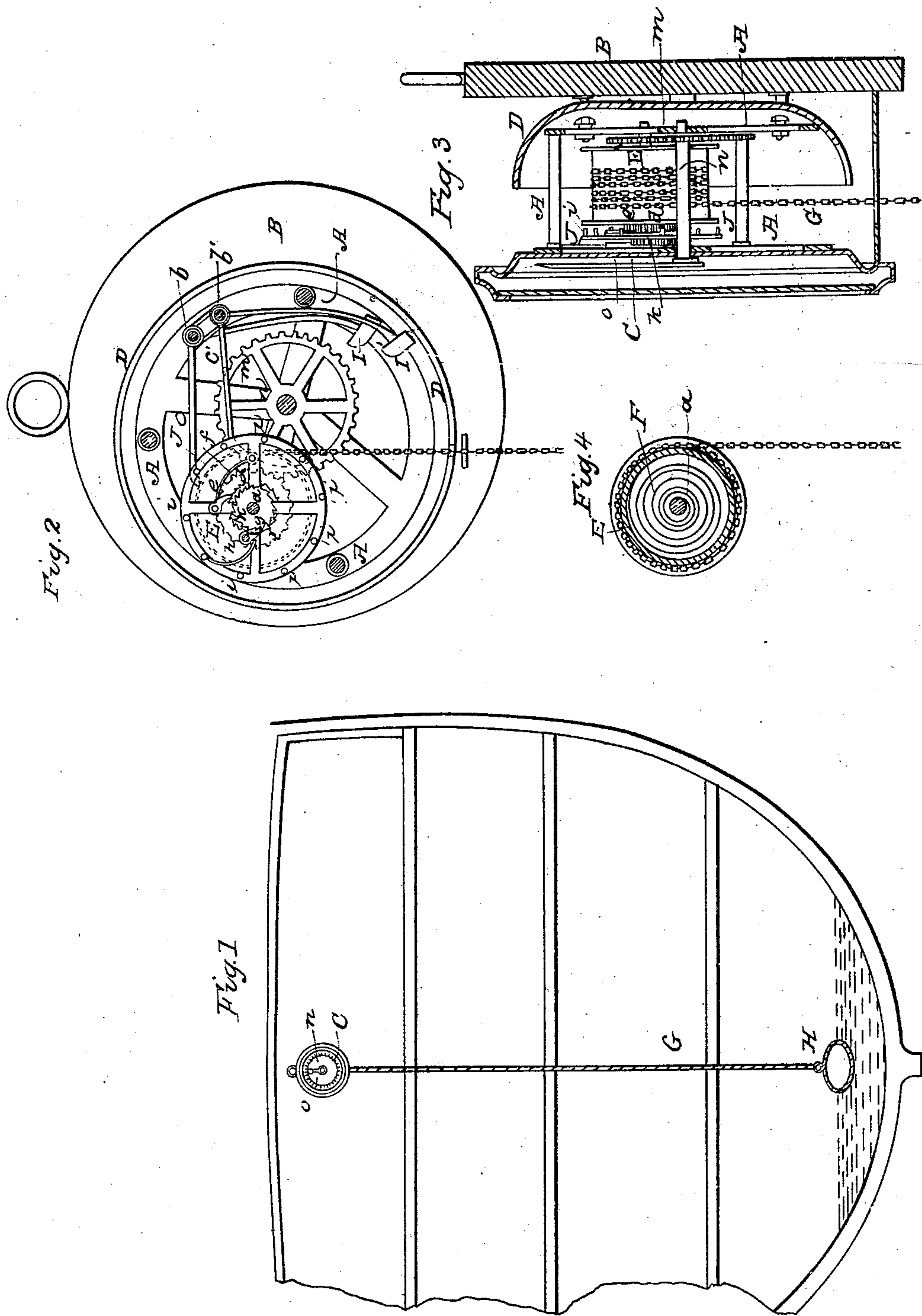


G. B. MASSEY.

Leak Alarm for Ships, &c.

No. 17,975.

Patented Aug. 11, 1857.



UNITED STATES PATENT OFFICE.

G. B. MASSEY, OF MOBILE, ALABAMA.

INSTRUMENT FOR INDICATING THE DEPTH OF WATER IN SHIPS.

Specification of Letters Patent No. 17,975, dated August 11, 1857.

To all whom it may concern:

Be it known that I, GIDEON B. MASSEY, of the city of Mobile, county of Mobile, and State of Alabama, have invented a new and
5 useful Alarm Instrument for Giving Information of the Rise of Water in the Holds of Ships and other Vessels; and I do hereby declare that the following is a full, clear, and exact description of the same, reference
10 being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a transverse section of a ship showing the alarm applied. Fig. 2, is a
15 front view of the instrument with the dial removed to show the working parts. Fig. 3, is a vertical transverse central section of the same. Fig. 4, is a section of the chain barrel in a plane parallel with Fig. 1.

20 Similar letters of reference indicate corresponding parts in the several figures.

The nature of my invention consists in the arrangement of parts hereinafter cited, relatively to one another for united operation,
25 to produce a leakage alarm and register for ships—to wit, the bell arranged on a firm part of the vessel, the spring within the barrel and the barrel within the bell, the float chain on the spring barrel,
30 the hammers within the bell, the pin wheel and the mechanism by which they are operated and controlled, on the arbor of the spring barrel, and the mechanism which measures the rise and fall of water along-
35 side the signal mechanism, and so as to be actuated by the spring which sounds the alarm, and at the same time that the alarm is sounded. This arrangement brings all
40 the parts compactly together and there is no liability of derangement, the number of parts is lessened, and there is no danger of the bell ringing from any cause other than the rise and fall of the water, whereas in other arrangements the bell is liable to be
45 rung by the motion of a vessel in a heavy sea or by any sudden jar or collision, and will continue to ring during the rising or falling of the water in the hold.

My arrangement registers with a single
50 hand and can by removing a number of the pins be made to ring an alarm as follows: 1, 2, 3, or any given number of sounds upon the bell to every inch of water in the hold of the vessel, whereas other arrangements
55 can only be constructed to give an occasional

sound and register by two hands, thus rendering mistakes liable.

To enable others to make and use my invention I will proceed to describe its construction and operation.

60 A, A, is an upright circular frame attached to a board B, and having secured in front of it a dial C.

D, is a bell secured to the board B, and surrounding the back part of the frame
65 A, A.

E is a hollow cylindrical barrel containing a coiled spring F, and fitted to rotate upon a stationary arbor *a*, which is secured
70 in the frame A, A, so as to be incapable of rotation, one end of the spring being secured to the arbor *a*, and the other to the barrel E.

G, is a chain or cord secured at one end to the barrel E, and having attached its other
75 end to a float H, which rests upon the bottom of the vessel when there is no water in the hold or pump well or floats upon the surface of the water when there is any in the hold or well. The arrangement of the
80 spring F and chain or cord G is such that when the float is at the bottom, the spring is wound up like a clock spring and kept in that condition by the weight of the float H, but that as the float rises by reason of
85 the increase of water in the hold or pump well the spring unwinds itself and turns the barrel upon the arbor *a*, and winds up the chain or cord and always keeps it tight between the barrel and the float; and the
90 weight of the float must be sufficient to cause the chain or cord to wind up the spring again, as the float is allowed to descend by the fall of the water in the hold or pump well.
95

I, I', are two hammers swinging within the bell on two pivots *b*, *b'*, secured in the framing A, A, said hammers having thin shanks elastic and having having arms *c*, *c'*
100 attached one to each.

J, is wheel fitted to rotate on the arbor *a*, and carrying a number of pins *i*, *i*.

d, is a ratchet wheel secured to the barrel E.

e, is a pawl attached to the wheel J, and
105 held in contact with the ratchet wheel *d*, by a spring *f* attached to the wheel J. The teeth of the ratchet wheel *d*, incline in such a direction that as the barrel is rotated by the spring F, when the float is caused to rise
110

by the increasing water in the hold or well, the wheel J, is rotated with the barrel by the ratchet wheel and pawl and the pins *i, i*, are caused to act upon the arms *c, c'*, of the
 5 hammers and make the hammers strike one after the other upon the bell, more or less rapidly as the water rises faster or slower, thus giving an alarm. When the barrel turns in the opposite direction, as it does
 10 when the float descends in consequence of the fall of the level of the water in the hold or well, the ratchet wheel *d*, raises the pawl *e*, and the wheel J, does not revolve, consequently the hammers cease to operate, and
 15 the operation of the latter also ceases when the barrel is stationary by reason of the level of the water no longer rising.

h, is a ratchet wheel secured to the wheel J, and *g*, is a pawl attached to the frame
 20 A, A, and held in contact with the said ratchet wheel by a spring *h*, that is also attached to the frame A, A, the teeth of the said ratchet wheel being set in such a direction that the pawl stops the ratchet wheel
 25 and consequently the wheel J, from rotating with the barrel E, as the float descends, but is raised by the said teeth when the wheel J, rotates with the barrel as the float rises.

l, is a gear secured to the barrel E, and
 30 gearing with a gear *m*, upon an arbor *n*, which is fitted to bearings in the frame A, A, and protrudes through the center of the dial C, the said arbor *n*, carrying a hand or index *o*, to point out on the dial, which is properly
 35 graduated, the exact depth or state of water

in the hold, so that whether the water is rising or falling or its condition stationary or what the rate of its rise or fall, may be known by examining the dial.

A weight to operate like a clock may be
 40 applied to the barrel as a substitute for the spring F, and the parts of the instrument may be arranged differently to what I have represented in the drawing, which is made
 45 to show the arrangement I at present consider the most convenient and in other respects the best.

What I claim as my invention and desire to secure by Letters Patent is—

The arrangement of the parts hereinafter
 50 cited, relatively to one another for united operation to produce a leakage alarm and register for ships—to wit, the bell D, arranged on a firm part of the vessel B, the
 55 spring F, within the barrel E, and the barrel within the bell; the float chain G, on the spring barrel E, the hammers I I', within the bell, the pin wheel J, and the mechanism by which they are operated, and controlled, on the arbor of the spring barrel,
 60 and the mechanism which measures the rise and fall of water, alongside the signal mechanism, and so as to be actuated by the spring which sounds the alarm, substantially as and for the purposes set forth.

G. B. MASSEY.

Witnesses:

W. TUSCH,
 J. F. BUCKLEY.