

1,359,882.

R. MACDONALD.
SHIPWRIGHT'S LEVEL.
APPLICATION FILED DEC. 26, 1919.

Patented Nov. 23, 1920.

3 SHEETS—SHEET 1.

Fig. 1.

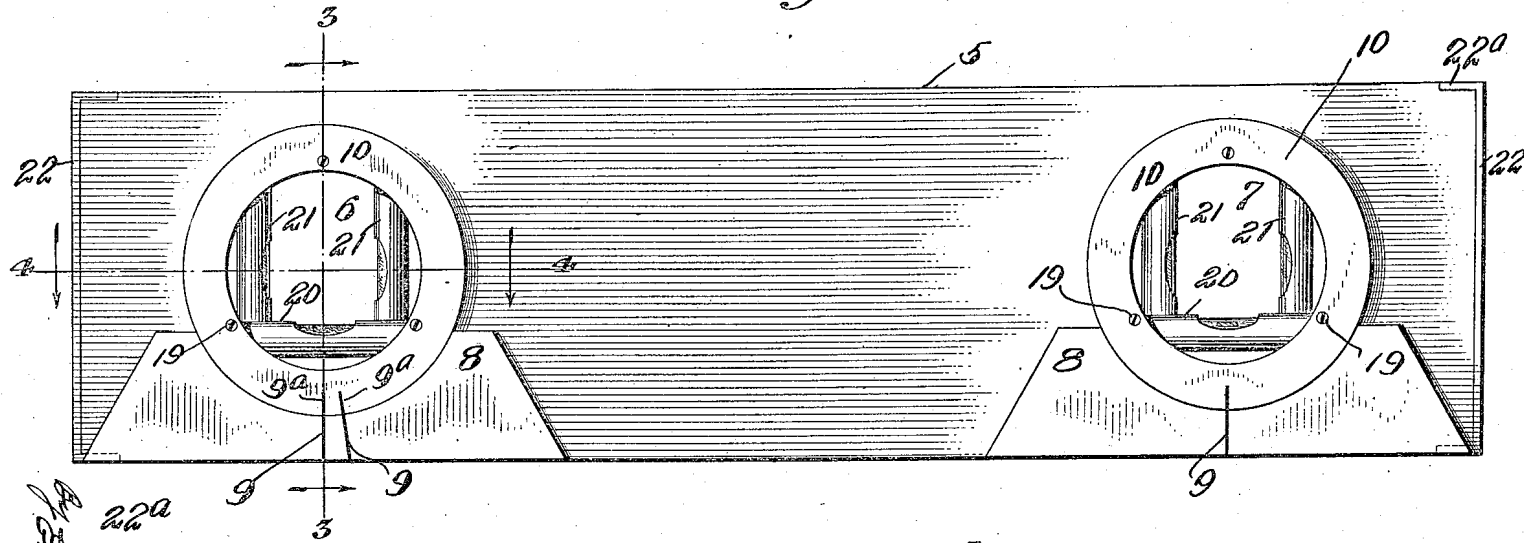
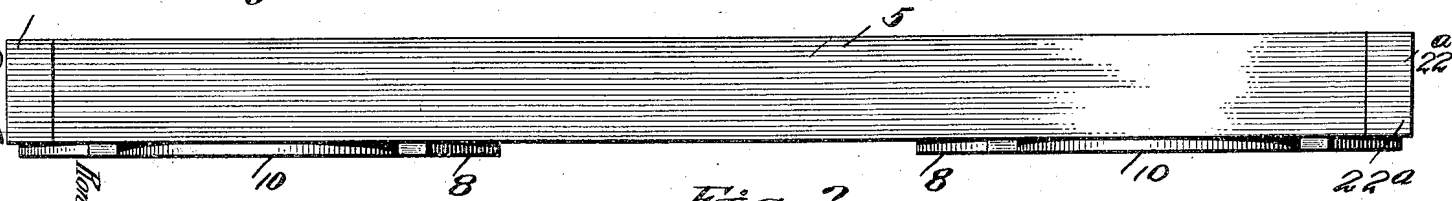


Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 5.

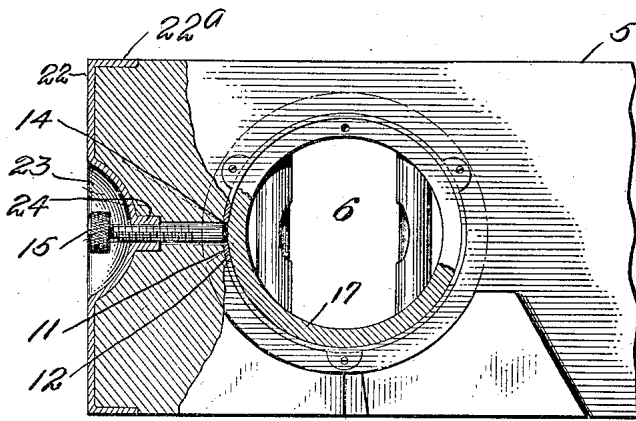


Fig. 3.

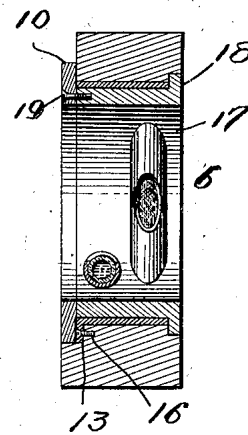


Fig. 4.

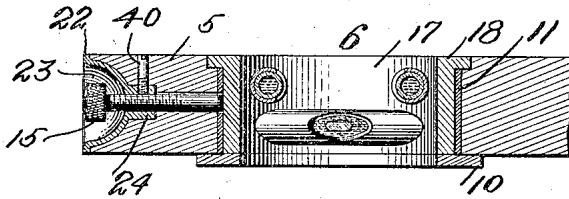
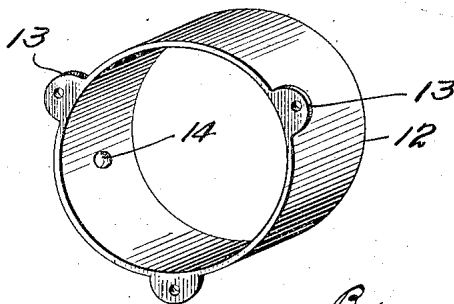


Fig. 6.



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3 SHEETS—SHEET 3.

Fig. 7

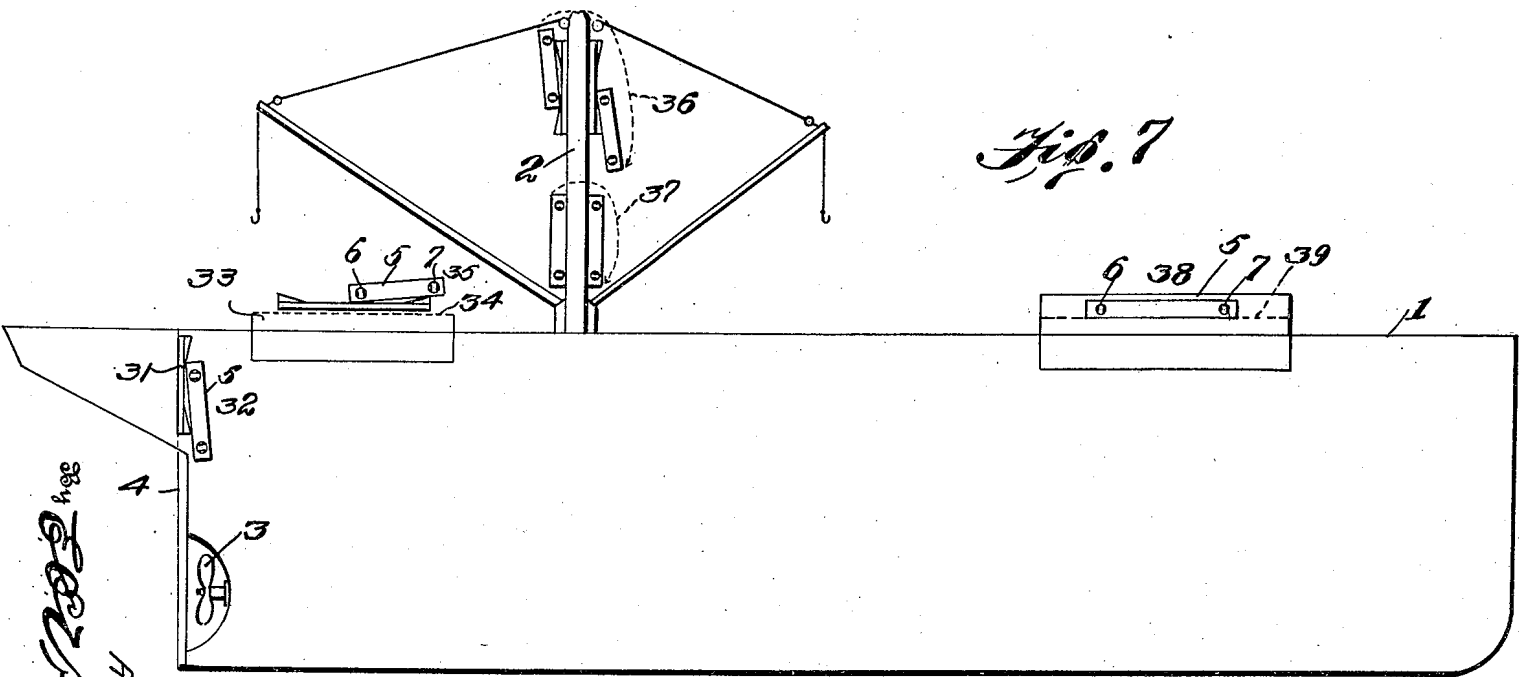


Fig. 8.

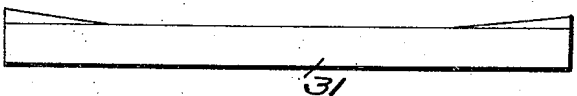
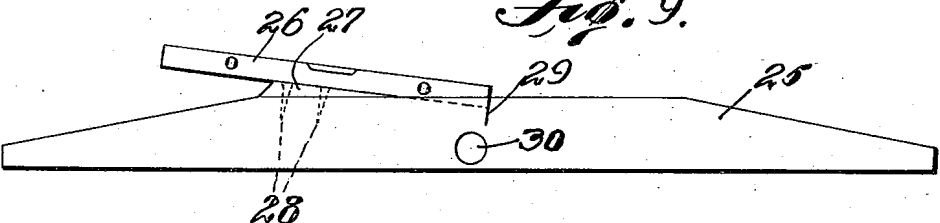


Fig. 9.



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UNITED STATES PATENT OFFICE.

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SHIPWRIGHT'S LEVEL.

1,359,882.

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Application filed December 26, 1919. Serial No. 347,352.

To all whom it may concern:

Be it known that I, RONALD MACDONALD, a subject of the King of England, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Shipwrights' Levels, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a shipwright's level, and the object is the construction of a level that is efficient and accurate in operation, and which level is peculiarly adapted for use in the construction of vessels or in making additions to or the repairing of vessels.

With this and other objects in view, my invention comprises certain novel combinations, constructions, and arrangements of parts as will be hereinafter more specifically described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

In the drawings,

Figure 1 is a view in side elevation of a level constructed in accordance with the present invention, while

Fig. 2 is a top plan view of the same.

Fig. 3 is a section taken on line 3—3, Fig. 1, looking in the direction of the arrows.

Fig. 4 is a section taken on line 4—4, Fig. 1, looking in the direction of the arrows.

Fig. 5 is a fragmentary end view of the level partly shown in section.

Fig. 6 is a perspective view of the bearing or lining sleeve.

Fig. 7 is a view in side elevation of a vessel showing the application of my level, to different parts.

Fig. 8 is a view in side elevation of a short declivity board.

Fig. 9 is a view in side elevation of a long declivity board, showing an ordinary house-carpenter's level thereon.

Referring to the drawings by numerals, 1 designates the hull of a ship, and 2 the mast; 3 is the propeller and 4 is the post. The application of my improved level to the vessel will be hereinafter described, when I more specifically explain the operation of the level and its adaptation to different works.

My improved level comprises an elongated body 5, which is preferably rectangular in

shape, and in the body 5, near its ends, are level devices 6 and 7. Fastened upon the same side of the body 5 are two brass dials 8, on each of which are lines 9 indicating declivity, and on the rings 10 of the level devices are formed indicating lines 9^a which are adapted to register with line 9 on the dials 8 (Fig. 1).

Each level device is similarly constructed, and it will only be necessary to describe one. The level device is placed in a large opening or aperture 11 (Figs. 4 and 5) formed in the body 5 of the level, and in this opening is placed the lining sleeve 12, which sleeve is provided with apertured lugs 13 and with an aperture 14, which hole 14 is to receive the inner end of threaded bolt 15. The apertured lugs 13 are set down in the body (Fig. 3) and suitable screws 16 are placed in these lugs for fastening the bearing or lining sleeve within the body. A sleeve-like casing 17 is rotatably mounted within the lining sleeve 12, and on one end of the casing is an annular flange 18; and on the other end of the casing 17 is detachably fastened, by screws 19, the ring 10. A level glass 20 is fastened upon the casing 17, and also fastened upon the casing at right angles to level glass 20, is a pair of plumb glasses 21. In the operation of my level, the operator can grasp the ring 10 and turn the casing to the desired position, and then lock the casing by means of the bolt-locking device hereinafter described, so as to retain the casing with its glasses 20 and 21 in the desired adjusted position. The bolt-locking device comprises a plate 22 placed over the end of the body 5, the plate being provided with right-angled ends 22^a; the plate is provided with a central dished portion 23 that acts as the container for the head of bolt 15, the bolt 15 being threaded in a hub-like portion 24 on the dished portion 23, and, as before stated, the inner end of the bolt 15 works through the aperture 14 of the sleeve lining 12 and is adapted to bear tightly against the casing 17, whereby the casing 17 can be manually locked against rotation within the sleeve 12. The positioning of the head 15 down into the dished portion 23 of the end plate allows the end to be tightly placed against a surface or object for leveling purposes; the dished portion 23 is large enough

to permit the operator's fingers to extend therein, for manipulating the head of the bolt 15.

Now, with reference to the adaptation or operation of my level under different conditions, I desire it to be understood that 25 (Fig. 9) is a long declivity board, generally about twenty feet in length, and used by shipwrights at present for laying the keel blocks. The ordinary house-carpenter's level 26 is placed upon the declivity board 25, and interposed between a part of the level 26 and said board 25 is a wedge 27 fastened to the declivity board preferably by screws 28. By sliding level 26 back or forward, the desired declivity is ascertained; when proper declivity is obtained, the shipwright generally marks at 29 for a "witness mark." My improved level does away with the two tools shown in Fig. 9, to wit: the declivity board 25 and the level 26, by combining the elements that will perform the function of the two in one level.

In the declivity board 25 is formed a large aperture or opening 30, and in certain work on board a ship, it may be desirable to remove one of the casings 17 in my level, placing the casing with its glasses in the opening 30, which will enable me to use my improved level, with its other positioned casing 17 therein, in conjunction with the declivity board, and in certain places, by using my level with one of its glasses in conjunction with the declivity board, having one of the level devices in opening 30, one operator can do the work of two.

In Fig. 8, I have shown a short declivity board 31, about three feet long, which is used when the ship is afloat for putting in any woodwork such as capstans, cushions, stanchions, steel masts, and all woodwork that has to go in plumb and parallel with the keel.

In Fig. 7, at 32, I have shown the short declivity board 31 and my improved level in position for taking fore and aft level of rudder post 4, when ship is down in the head. To get thwartship levels, the other end of the declivity board will have to be used and can be taken from port or starboard side of rudder post 4.

A hatch coaming 33 is usually provided with a level line 34 marked there while the ship is on the ways, so that when the ship is launched, all necessary plumbing of the parts can be done from this line 34 as a basis to work from. The position of my level at 35 (Fig. 7) illustrates the picking of fore and aft level of hatch coaming to plumb mast 2. To plumb opposite side of mast or stanchion, turn level and declivity board upside down, as shown at 36; then, if mast shows plumb on both sides, it is correct. At 37, the level is shown doing the same work by taking the level on one side

of the mast and then on the other side, turning the level upside down and bringing one of the glasses in one of the level devices into use so as to check up the work.

At 38 I have shown the hatch coaming and the taking of the level by using my improved level instead of the method shown at 35. The numeral 29 designates the level line that is put on the hatch when the ship is on the ways. When using my level, there is not the chance for confusion as in the old way, and the level is not so clumsy as the other tools now used, and it does away with the use of one man, and when a level or measurement is obtained and the casing 17 fastened in a slot positioned by bolts 15, the level can be used until a change is desired. Extending through the sides of the body 5 (Fig. 4) is a locking screw 40 which serves to fasten the locking bolt 15 in an adjusted position, insuring the satisfactory locking of the casing 17 in its adjusted or desired position, this screw 40 being threaded through an opening formed in the hub-like portion 24 of the dished part 23 of the end plate 22.

What I claim is:

1. In a device of the class described, the combination of a body provided with an opening, a lining sleeve provided at one edge with apertured lugs and positioned in said opening, said lugs seated in the body, fastening means extending through the apertures of the lugs for fastening the sleeve upon the body, a rotatable casing positioned within said sleeve, said casing provided with an annular flange at one end, a ring detachably fastened to the other end of said casing, and a level glass mounted within said casing.

2. In a device of the class described, the combination of a body provided near one end with an opening, a dial positioned upon one side of the body and contiguous to said opening, a level glass-carrying casing rotatably mounted in said opening, a ring contiguous to said dial and detachably secured to the casings, and said dial and ring provided on their outer faces with markings for indicating the declivity of a part of a vessel.

3. In a device of the class described, the combination with a body provided with an opening, of a glass-carrying casing rotatably mounted in said opening, a plate covering the end of said body, said plate provided with ends at right angles thereto and with a central dished portion, said dished portion provided with a hub-like portion, a bolt threaded into the hub-like portion and provided with a head down in the dished portion of the plate, and the inner end of said bolt being adapted to engage the outer surface of the casing for locking the same against rotary movement upon the body.

4. In a device of the class described, the combination with a body provided with an opening, of a glass-carrying casing rotatably mounted within said opening, an end plate upon the end of said body, said end plate provided with a dished portion having an integral hub-like extension projecting into the body, said hub-like portion provided with a threaded opening at right angles to the longitudinal axis of the hub-like portion, a bolt threaded into the hub-like portion and being adapted to engage at its inner end the outer surface of the rotatable casing for locking the casing in an adjusted position upon the body, said bolt provided with a head normally down in the dished-like portion, and a locking screw threaded into the threaded opening of the hub-like portion at right angles to the longitudinal axis of said hub-like portion, and

said locking screw adapted to lock the bolt against accidental movement, substantially as shown and described.

5. In a device of the class described, the combination with a body, of a casing carrying a level glass movably mounted upon said body, a rotatable locking device carried by said body and adapted to engage said casing for preventing movement thereof upon the body, and an auxiliary locking device upon the body and at an angle to the first-mentioned locking device for retaining the first-mentioned locking device against accidental movement, to insure the secure fastening of the movable casing in an adjusted position upon the body.

In testimony whereof I hereunto affix my signature.

RONALD MacDONALD.