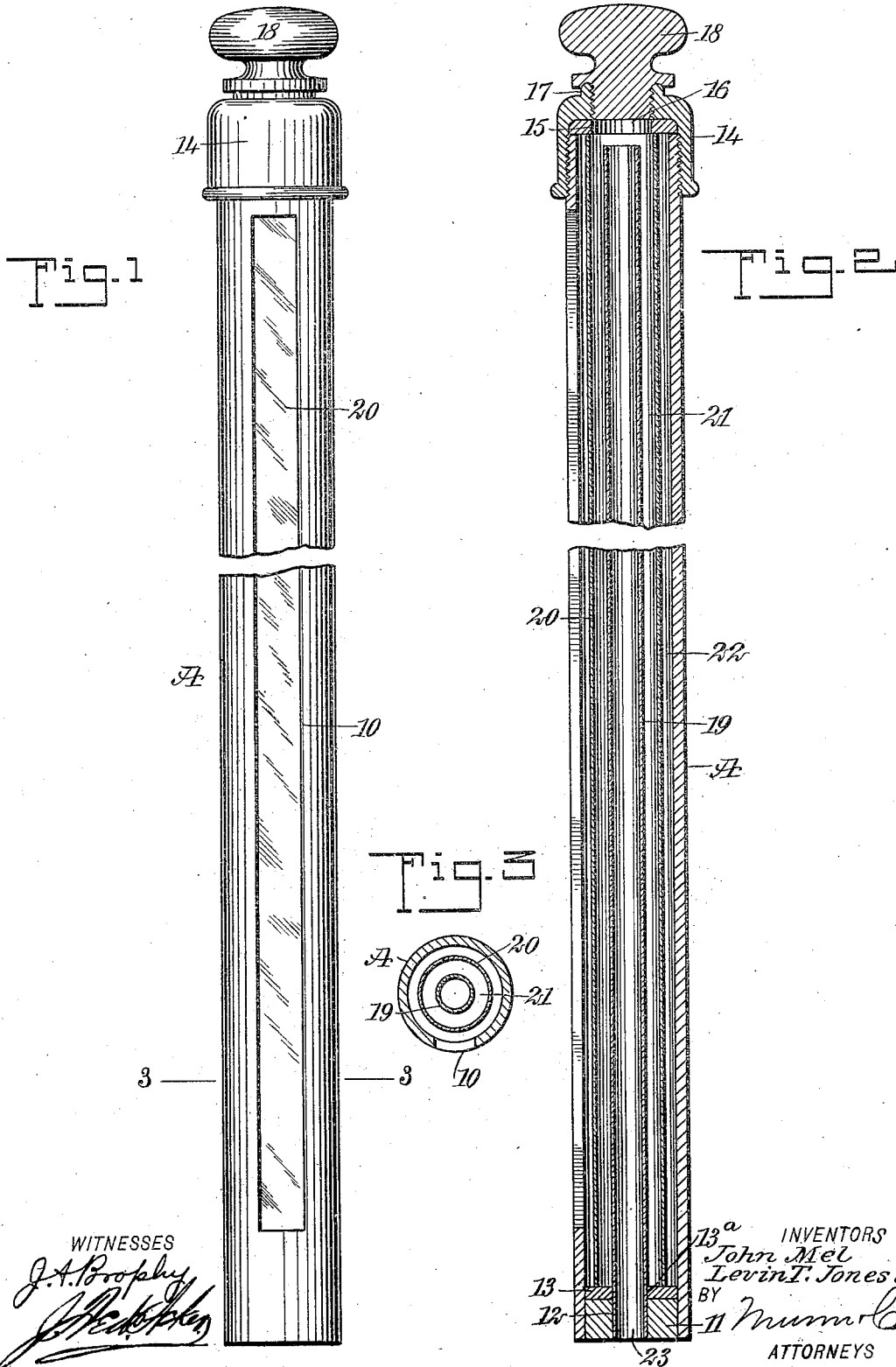


J. MEL & L. T. JONES, JR.
GAGE FOR DEEP SEA SOUNDINGS.
APPLICATION FILED APR. 15, 1907.

934,741.

Patented Sept. 21, 1909.



UNITED STATES PATENT OFFICE.

JOHN MEL AND LEVIN THOMAS JONES, JR., OF GALVESTON, TEXAS.

GAGE FOR DEEP-SEA SOUNDINGS.

934,741.

Specification of Letters Patent. Patented Sept. 21, 1909.

Application filed April 15, 1907. Serial No. 368,424.

To all whom it may concern:

Be it known that we, JOHN MEL and LEVIN THOMAS JONES, JR., both citizens of the United States, and residents of Galveston, in the county of Galveston and State of Texas, have invented a new and useful Improvement in Gages for Deep-Sea Soundings, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide a liquid gage or recorder for deep sea soundings, so constructed that it will contain no moving parts, and so that its action is both positive and direct, and so that the instrument can be used an indefinite number of times without any delay.

A further purpose of the invention is to provide an instrument of the character described that is simple, durable and economic, and which may be used alone or coupled with another instrument, and one that will bring up with it a column of water that unmistakably indicates the depth to which the instrument descended.

It is also a purpose of the invention to provide a liquid gage or recorder wherein there is no overbalanced pressure when it is at rest, or at any depth or when moving, in fact the unbalanced pressure is practically nothing.

The invention consists in the novel construction and combination of the several parts as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the instrument; Fig. 2 is a longitudinal section through the instrument; and Fig. 3 is a transverse section taken practically on the line 3—3 of Fig. 1.

This instrument consists essentially of two tubes so arranged that water entering one will in reaching the top run over in the next adjoining tube. We preferably obtain this condition by placing one tube within the other, as illustrated, rather than by placing them side by side.

A represents a heavy brass tube which is practically the body or casing for the instrument, and is provided with a longitudinal opening or slot 10, at which the height of the water is read in connection with any

appropriate scale. At the lower end of the casing tube A, a plug 11 is secured in a water-tight manner having a central opening 12 therein, and a washer 13 that rests upon the upper face of the plug has likewise a central opening 13^a registering with the opening in the plug 11. A cap 14 is screwed upon or is otherwise secured to the opposite or upper end of the casing tube A, and a washer or gasket 15 is fitted to the end wall of the said cap, having a central opening 16 therein of greater diameter than the opening in the opposing washer or gasket 13, as is shown in Fig. 2. The cap 14 is provided with a central, preferably threaded opening 17, in which the shank of a stopper 18 is screwed, and upon the removal of this stopper, the liquid contained in the instrument may be emptied out. The stopper 18 likewise serves as a convenient means for attaching a line to the instrument to lower and raise the same. A metal tube 19 is snugly fitted in the opening 12 of the plug 11 and this tube 19 extends centrally through the casing tube A to a point below the washer 15 at the opposite end of the instrument, as is also shown in Fig. 2. A transparent tube 20, preferably a glass tube, of greater diameter than the innermost tube 19, is located around the said tube 19, the ends of the said transparent tube 20 having water-tight connections with the washers or gaskets 13 and 15, as is illustrated in Fig. 2, and quite a space 21 intervenes between the two inner tubes 19 and 20 which are preferably concentric, while but a small space 22 is usually permitted between the transparent tube 20 and the casing tube A.

The action is as follows: When the instrument is immersed in the water, the water rises through the lower opening 23, filling the inner tube 19, and compresses the air in said tube and the space 21 that intervenes between the inner tubes 19 and 20 until the top of the innermost tube 19 is reached, at which point the water will flow over into the said space 21 between the inner tubes. As the pressure of the water increases with the depth, the amount of water thus caught in the space 21 is a measure of the depth. The height of water thus secured is referred to a proper scale to give the depth in fathoms or feet as required. This water is then emptied out from the instrument upon the removal of the plug 18, and the instrument is again ready for use.

It will be observed that this instrument contains no moving parts and that its action is both positive and direct, as above stated, and that it can be used an indefinite number of times without any delay, and by properly proportioning the volumes of tube 19 and space 21, the instrument can be made to register for any depth.

We are aware that there are at present in use several instruments for recording the depth of water; so far as we know, however, there is only one actual depth recorder, namely, the recorder known as the "Sir William Thompson." This instrument is constructed with a piston and moving indexes, together with a spring that returns the piston when the recorder is drawn up out of the water. Such a recorder is not entirely reliable owing to the fact that they have to depend on both a spring and a piston, either of which may quickly get out of order for any cause. In the construction of our instrument, there are no moving parts to get out of order. If the piston above named leaks, then the proper depth will not be recorded. Again, if the tension of the spring varies for any cause, the depth recorded is of course incorrect. As for the tubes which depend on the action of salt water or a sensitized surface to record the point to which the water had risen, they can be used only once, whereas in our tube we actually bring this column of water to the surface, while in the other tubes the water runs out.

Having thus described our invention, we claim as new and desire to secure by Letters Patent,—

1. A gage for deep sea soundings, comprising a body tube or casing provided with a discharge opening at one end, a removable closure for said discharge opening, a transparent tube located within the body tube, washers engaging the ends of the transparent tube, the washer at one end of the transparent tube having an opening registering with the discharge opening of the body tube, and a metal tube of lesser diameter than the transparent tube, the said tube having one end secured water tight in the opposite end of the body tube, the said end of the metal tube being open to the outside atmosphere, the other end of said metal tube, terminating short of the corresponding end of the transparent tube.

2. In a gage for deep sea soundings, a body tube having a longitudinal opening between its ends, a removable closure for the upper end of the body tube, a plug secured in the lower end of said body tube and having a central opening, a washer resting on

the inner face of the plug and also having a central opening, a transparent tube located within the body tube and engaging at one end with the said washer, a washer held in engagement with the other end of said transparent tube, and an inner tube open at both ends and having one end fitting snugly in the opening in the said plug and washer at the lower end of the body tube, the other end of said inner tube being in communication with the transparent tube.

3. In a gage for deep sea soundings, a casing or body tube provided with a longitudinal slot, a plug secured in the lower end of said body tube and having a central opening, a washer resting on the upper face of the plug and also having a central opening, a transparent tube within the said body tube and engaging at its lower end with the said washer, a cap secured to the upper end of the body tube, a washer fitting within the cap and engaging the upper end of said transparent tube, the washer having a central opening registering with the opening in the transparent tube, and of greater diameter than the opening in the washer at the other end of the body tube, the said cap having a central opening, a removable stopper for closing said opening in the cap, and a central tube fitting snugly at its lower end in the opening of the plug and washer at the lower end of the body tube, the said tube being open at both ends and extending centrally through the transparent tube to a point below the washer at the upper part of the body tube.

4. A gage for deep sea soundings comprising a casing, a transparent tube within the casing, a cap secured to the upper end of the casing, a washer fitting within the cap and engaging the upper end of said transparent tube, the washer having a central opening registering with the opening in the transparent tube, the said cap having a central opening and a removable stopper for closing said opening, and a second tube sealed at its lower end to the transparent tube, the said end being open at all times to the atmosphere, the said second tube being unobstructed throughout its length and communicating at its upper end with the corresponding end of the transparent tube.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN MEL.

LEVIN THOMAS JONES, JR.

Witnesses:

J. SINGER,

E. FACHAN.