

May 8, 1945.

P. McAULIFFE

2,375,568

FLUID CLOCK

Filed July 22, 1942

3 Sheets-Sheet 1

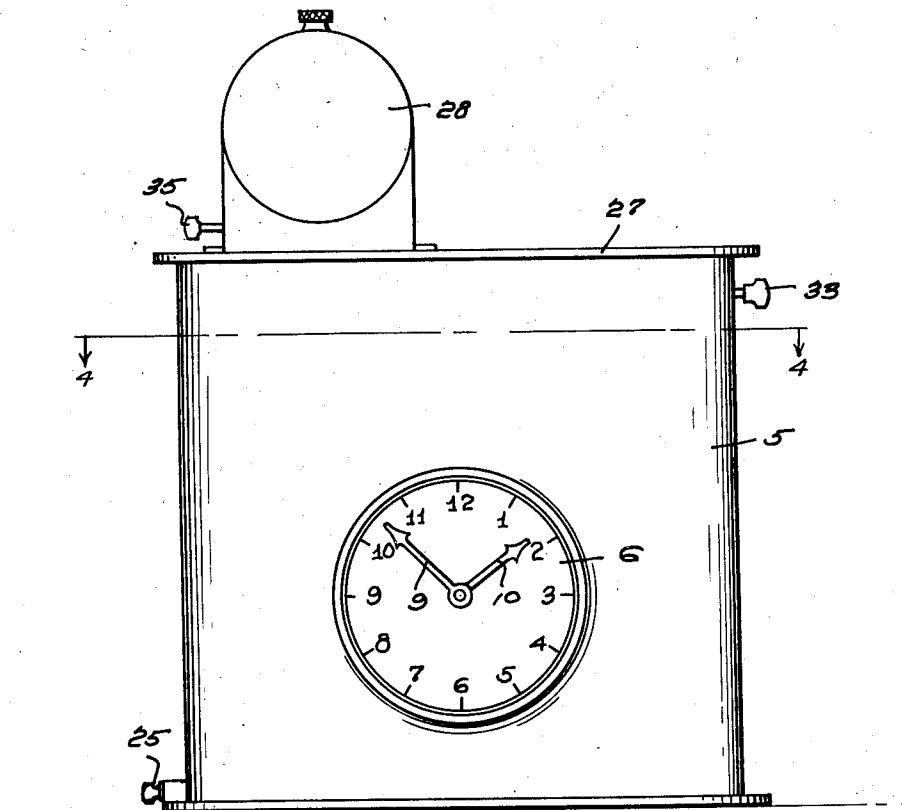


Fig. 1.

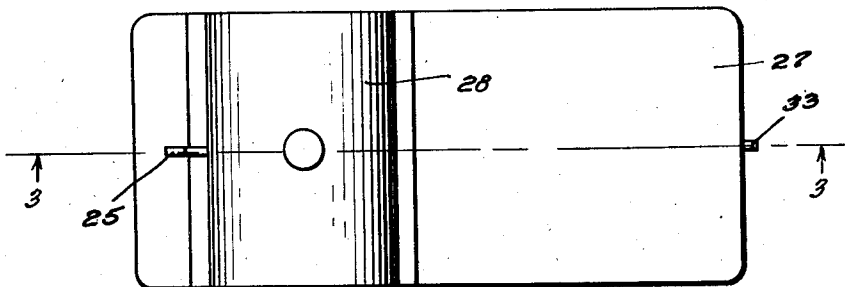


Fig. 2.

Inventor

Patrick McAuliffe

By

Clarence A. O'Brien  
and Harway B. Jacobson  
Attorneys

May 8, 1945.

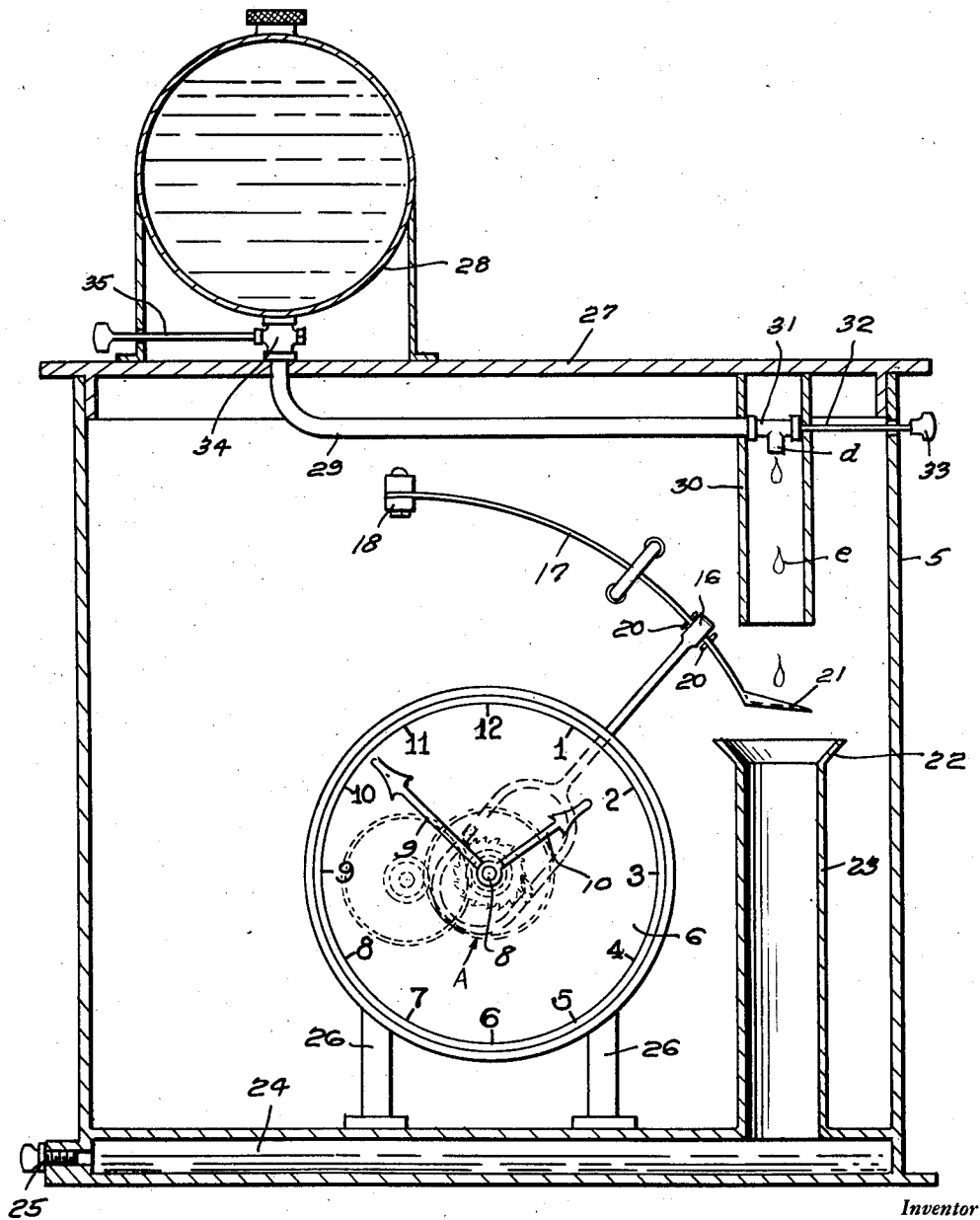
P. McAULIFFE

2,375,568

FLUID CLOCK

Filed July 22, 1942

3 Sheets-Sheet 2



Inventor

Fig. 3.

Patrick McAuliffe

By

Clarence A. O'Brien  
and Harvey B. Jacobson  
Attorneys

May 8, 1945.

P. McAULIFFE

2,375,568

FLUID CLOCK

Filed July 22, 1942

3 Sheets-Sheet 3

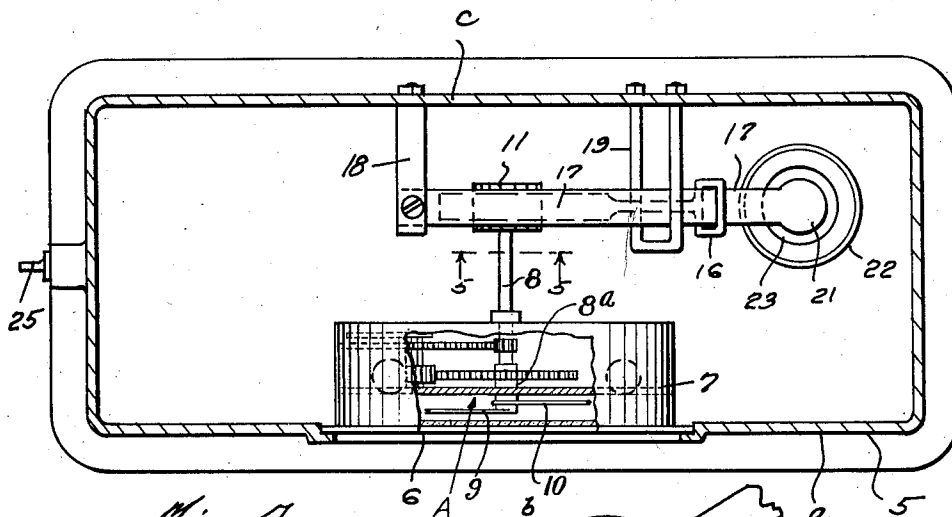


Fig. 4.

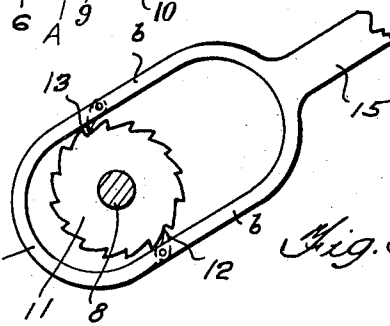


Fig. 5.

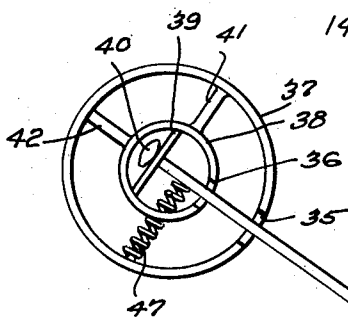


Fig. 6.

Inventor

Patrick McAuliffe

By

Clarence A. O'Brien  
and Harvey B. Jacobson  
Attorneys

## UNITED STATES PATENT OFFICE

2,375,568

## FLUID CLOCK

Patrick McAuliffe, New York, N. Y.

Application July 22, 1942, Serial No. 451,911

5 Claims. (Cl. 58-2)

This invention relates to new and useful improvements in fluid clocks such as are operated by water or any other desirable liquid.

The principal object of the present invention is to provide a fluid clock which will operate with precision and which in construction employs only the basis elements necessary in a liquid clock, with these elements assembled in such a manner as to be more positive acting and fool-proof than conventional devices of this character.

Other objects and advantages of the invention will become apparent to the reader of the following description.

In the drawings—

Figure 1 represents a front elevational view of the clock.

Figure 2 is a top plan view.

Figure 3 is a section on the line 3—3 of Figure 2.

Figure 4 is a horizontal sectional view taken substantially on the line 4—4 of Figure 1.

Figure 5 is a fragmentary detailed sectional view taken substantially on the line 5—5 of Figure 4 and showing the drive ratchet.

Figure 6 is a fragmentary side elevational view of a rigid but yieldably mounted liquid drop operated arm.

Referring to the drawings wherein like numerals designate like parts, it can be seen that numeral 5 denotes a housing having a front wall *a* in which is an opening through which a clock dial 6 is visible. At the rear of the clock dial 6 is a shell 7 containing a 12 to 1 ratio gear drive mechanism A. A shaft 8 carrying a minute hand 9 and driven by the pawl and ratchet mechanism partially shown in Figure 5, drives the mechanism A and, in turn, a hollow shaft 8*a* on the shaft 8, the hollow shaft 8*a* being provided with an hour hand 10.

The shaft 8 has a ratchet wheel 11 thereon with which engage diametrically opposed pawls 12, 13 on side portions *b*, *b* of a drive frame 14 which has an elongated shank 15 terminating in an eye 16 loosely embracing an elongated curved spring arm 17 having its upper end anchored as at 18 to the back wall *c* of the housing 5. A U-shaped stop member 19 embraces the spring arm 17 to limit movement thereof and is attached to the rear wall *c*.

Stop members, such as pins 20 are provided on the spring arm 17 to limit the position of the eye 16 thereon.

A small pan-like structure 21 is at the lower end of the spring arm 17 and overlies the upper flared end 22 of a stack 23, which opens at its

lower end into a liquid receiving chamber 24 having a drain plug 25. As is shown in Figure 3, the cylindrical shell 7 of the clock is mounted on legs 26 supported by the top wall of the compartment 24.

Upon the removable top wall 27 of the housing 5 is mounted a liquid tank 28 from which a conduit 29 extends downwardly and through an opening in the top 27. This conduit 29 extends horizontally under the cover or top 27 and into a spout 30 where it is provided with a T-fitting 31 having its discharge end *d* depending as shown in Figure 3. This fitting 31 contains a valve element controlled by a rod 32 extending beyond the spout 30 and through an opening in one end wall of the housing 5, where a hand knob 33 is provided.

The conduit 29 adjacent the tank 28 has a valve 34 therein controlled by a rod 35 extending to a convenient lateral position.

It can now be seen, that when the valve in the T-fitting 31 has been properly regulated by the rod 32 so that periodic drops *e* of liquid will discharge therefrom, these drops will fall onto the pan-like structure 21, causing flexing of the spring arm 17 and corresponding action of the drive frame 14, with the result that the pivotal pawls 12, 13 act on the ratchet wheel 11 and cause progressive rotation of the shaft 8 which, in turn, drives the minute and hour hands 9, 10.

A modification of the spring arm 17 is shown in Figure 6, this view showing a rigid arm 17*a* having a pan-like structure 21*a* at its lower end, while its upper end is disposed through openings 35, 36 in concentric rings 37, 38, respectively, and through an opening in a bridge member 39 within the ring 38, beyond which the rigid arm 17*a* has a head 40. The internal ring 38 is secured to the external ring 37 by spokes 41, 42, and a coiled compression spring 47 is interposed between the outer ring 37 and the arm 17*a* within the confines of the ring 38, the spring 47 extending through an opening in the ring 38. Thus it can be seen, that the arm 17*a* is not only spring-supported but adequately guided by the short slots 35, 36 in the rings 37, 38. The shank 15 of the drive frame 14 is associated with this arm 17*a* in the same manner.

While the foregoing specification sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size and materials may be resorted to without departing from the spirit and scope of the invention as claimed hereinafter.

Having described the invention, what is claimed as new is:

1. A liquid clock comprising a liquid supply tank having a conduit extending therefrom, a valve in the conduit having a discharge opening from which liquid can drop, a yieldable arm having a pan-like structure onto which the drops of liquid can drop and effect movement of the arm, a clock dial, an indicating arm for the dial, a shaft for the arm, and drive means between the yieldable arm and the shaft, said drive means comprising a frame carrying a pair of opposite pivotal pawls and a ratchet wheel on the shaft located within the confines of the frame and with which the pawls engage.

2. A liquid clock comprising a liquid supply tank having a conduit extending therefrom, a valve in the conduit having a discharge opening from which liquid can drop, a yieldable arm having a pan-like structure onto which the drops of liquid can drop and effect movement of the arm, a clock dial, an indicating arm for the dial, a shaft for the arm, and drive means between the yieldable arm and the shaft, said yieldable arm being in the form of a spring having one end anchored.

3. A liquid clock comprising a liquid supply tank having a conduit extending therefrom, a valve in the conduit having a discharge opening from which liquid can drop, a yieldable arm having a pan-like structure onto which the drops of liquid can drop and effect movement of the arm, a clock dial, an indicating arm for the dial, a shaft for the arm, and drive means between the yieldable arm and the shaft, said yieldable arm comprising an elongated rigid member having

said pan-like structure at one end, and a compression spring supporting the other end of the arm.

4. A liquid clock comprising a liquid supply tank having a conduit extending therefrom, a valve in the conduit having a discharge opening from which liquid can drop, a yieldable arm having a pan-like structure onto which the drops of liquid can drop and effect movement of the arm, a clock dial, an indicating arm for the dial, a shaft for the arm, and drive means between the yieldable arm and the shaft, said yieldable arm comprising an elongated rigid member having said pan-like structure at one end, and a compression spring supporting the other end of the arm, and guide means for said rigid arm.

5. A liquid clock comprising a liquid supply tank having a conduit extending therefrom, a valve in the conduit having a discharge opening from which liquid can drop, a yieldable arm having a pan-like structure onto which the drops of liquid can drop and effect movement of the arm, a clock dial, an indicating arm for the dial, a shaft for the arm, and drive means between the yieldable arm and the shaft, said yieldable arm comprising an elongated rigid member having said pan-like structure at one end, and a compression spring supporting the other end of the arm, and guide means for said rigid arm, said guide means comprising an annulus having a short slot therein through which the arm is disposed and a second annulus having an opening therein through which the arm is disposed, said spring disposed between the last-mentioned ring and the arm.

PATRICK MCAULIFFE.