Nov. 25, 1924. 1,516,753

F. T. RICHARDS

TIME SWITCH

Filed Dec. 4, 1922 3 Sheets-Sheet 1

Fig. 1.

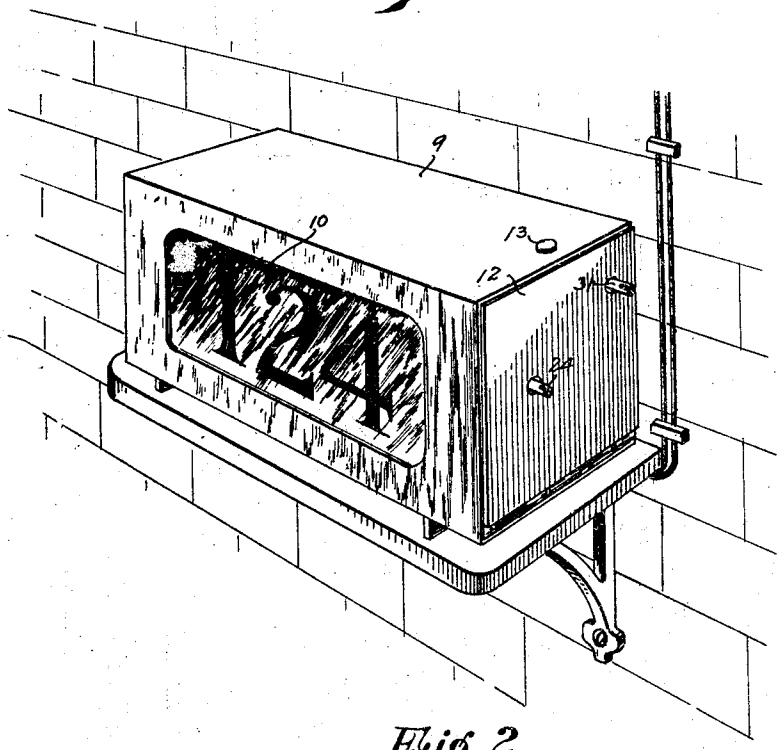
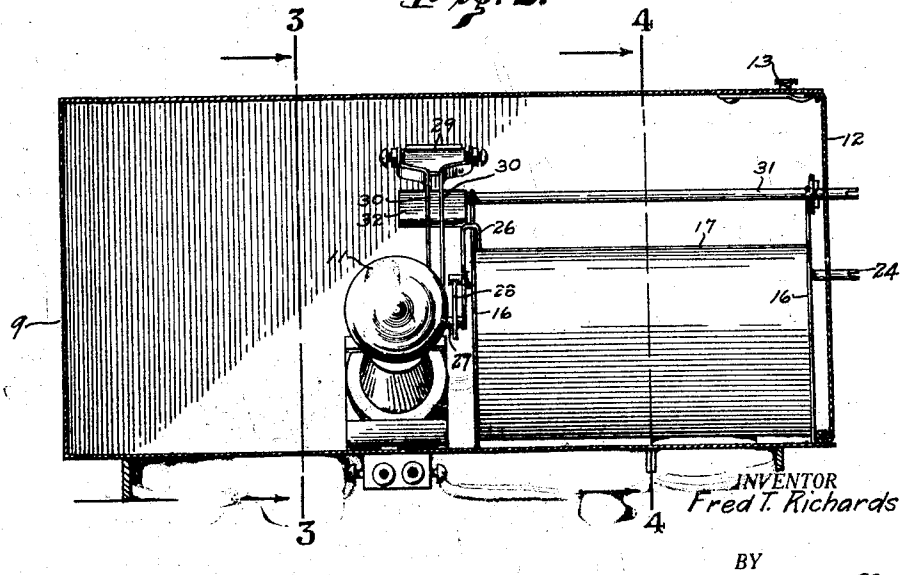


Fig. 2.



INVENTOR
Fred T. Richards

BY
Westall and Walker
ATTORNEYS

Nov. 25, 1924. 1,516,753

F. T. RICHARDS

TIME SWITCH

Filed Dec. 4, 1922 3 Sheets-Sheet 2

Fig. 3.

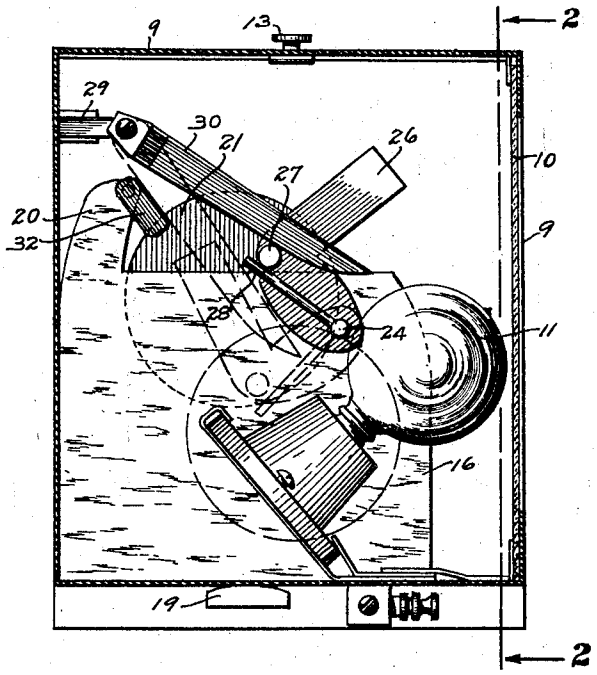
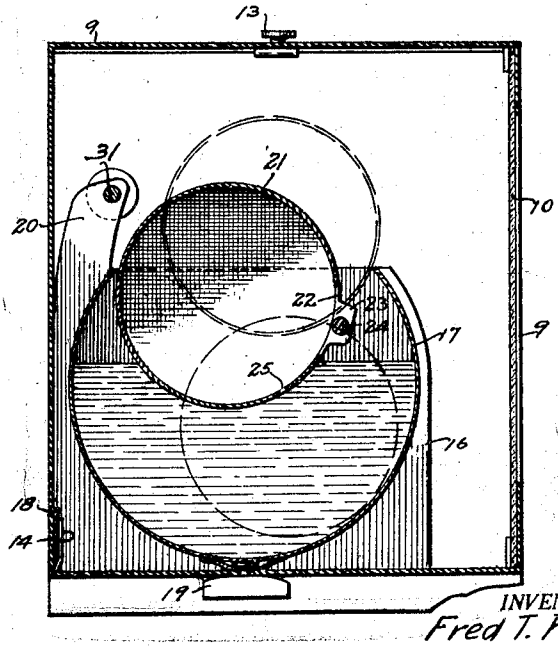


Fig. 4.



INVENTOR
Fred T. Richards

BY
Nesbitt and Wallace
ATTORNEYS

Nov. 25, 1924. 1,516,753

F. T. RICHARDS

TIME SWITCH

Filed Dec. 4, 1922 3 Sheets-Sheet 3

Fig. 5.

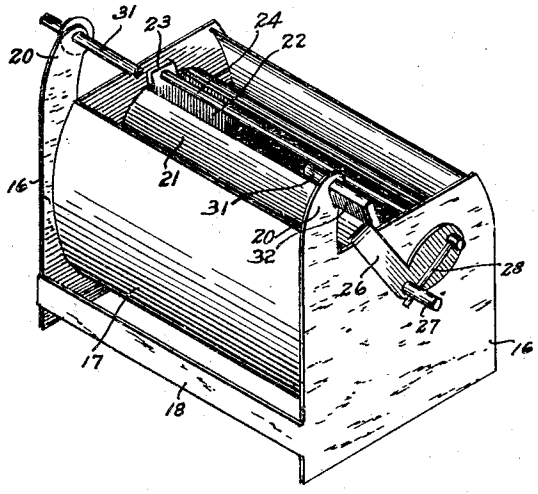


Fig. 8.

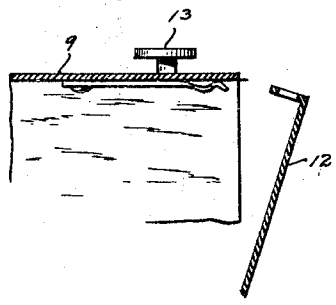


Fig. 6.

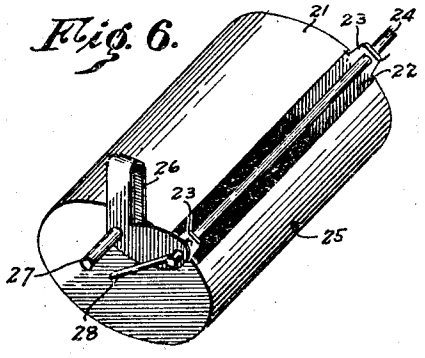
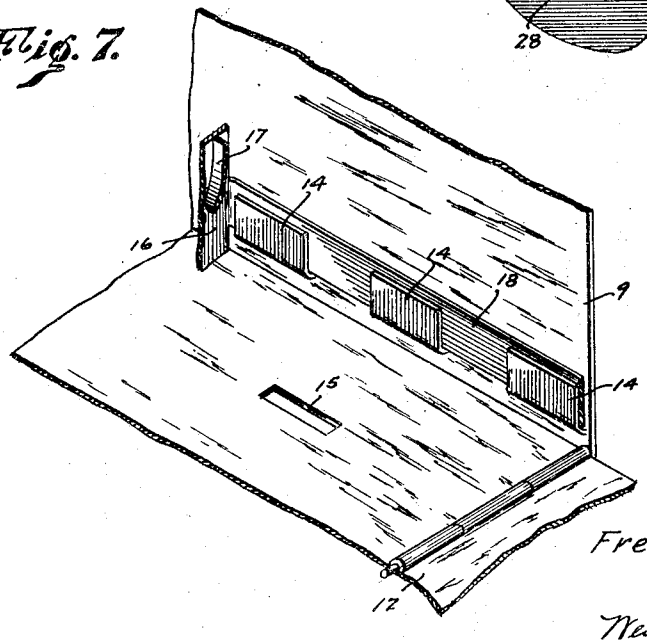


Fig. 7.



INVENTOR
Fred T. Richards

BY
Westall and Wallace
ATTORNEYS

Patented Nov. 25, 1924. 1,516,753

UNITED STATES PATENT OFFICE.

FRED T. RICHARDS, OF LOS ANGELES, CALIFORNIA.

TIME SWITCH.

Application filed December 4, 1922. Serial No. 604,724.

To all whom it may concern:

Be it known that I, FRED T. RICHARDS, a citizen of the United States, and resident of Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in a Time Switch, of which the following is a specification.

This invention relates to a device for controlling the illumination of matter to be displayed, such as a house number plate.

It is desirable to illuminate certain signs and display matter for a limited period during the night. The primary object of this invention is to provide a device for controlling a light so that the light will be extinguished after a given period of time has elapsed. Another object of this invention is to provide a device which is simple, durable, adjustable and will not get out of order easily. In the present invention the action of gravity upon a float bucket having a seep hole is transmitted to an electric make and break, so that after a limited time the make and break will be caused to open an electric circuit leading to a lamp and thereby to extinguish the lamp.

The invention is shown herein as embodied in an illuminated number box for displaying house numbers, although not limited to such use. In the drawing, Fig. 1 is a perspective view of the box mounted upon a shelf secured to a wall; Fig. 2 is a vertical section through the box as seen on the line 2—2 of Fig. 3; Fig. 3 is a vertical section as seen on the line 3—3 of Fig. 2; Fig. 4 is a vertical section as seen on the line 4—4 of Fig. 2; Fig. 5 is a perspective view of the liquid container and the float bucket in assembled relation and removed from the box; Fig. 6 is a perspective view of the float bucket removed from the reservoir; Fig. 7 is a fragmentary perspective view showing the inside of the box; and Fig. 8 is a sectional view of a fragment of the box on an enlarged scale showing the lock for the door.

Referring more particularly to the drawings, 9 indicates a box, which is preferably made of sheet metal and has a window 10 at the front thereof covered by a transparent medium, such as glass. A house number may be marked on the glass by means of opaque or opalescent paint, so that when the interior of the box is illuminated by a lamp 11, the number will be displayed. One end of the box is open and hingedly connected thereto is a cover 12. A spring snap button 13 is provided to hold the cover closed. Adjacent the door on the rear wall of the box are clips 14 for holding a container. In the bottom of the box is an opening 15 for the passage of a key to hold the reservoir in place.

Referring more particularly to Fig. 5, the container is shown as consisting of side walls 16 joined by a curved wall 17 of cylindrical form. A bar 18 connects the side walls and is adapted to be disposed behind the clips 14. Rotatably secured to the bottom of the container is a key 19, which may be turned and passed through the opening 15 and then turned transversely thereto to lock the container in position. The wall 17 is open at the top to permit movement of a bucket float and to permit refilling of the container. The side walls are formed with arms 20 to receive the shaft of a regulating element.

The bucket float comprises a cylinder 21 open along its cylindrical face as indicated by 22. Extending laterally from the bucket are ears 23 to rotatably receive a shaft 24. The shaft 24 is pivoted in the side walls 16. Formed in the cylindrical wall 21 near the opening 22 is a seep hole 25, whereby liquid can pass into the interior of the bucket. An arm 26 is secured to the bucket and extends radially therefrom then is bent back on itself so that it will clear the outside of the container, and be in parallel relation with the side wall 16, as shown in Fig. 5. This arm is extended so that shaft 24 will pass therethrough. Extending from the arm 26 is a metallic pin 27 for engagement by a rod 28 fixed to the shaft 24. One end of the shaft 24 is provided with a slot for a key. The shaft 24 extends through an opening in the cover 12 of the box. A key can be placed on the end of the shaft and the shaft turned. This causes the arm 28 to engage the pin 27 and lift the bucket. The container is preferably filled about three-quarters full of liquid, some weather-proof oil being preferable. The level of the oil should be below the opening 22 in the bucket, when the latter is in position shown in Fig. 5, that is with its opening in its uppermost position. The shaft 24 is turned so as to dispose the bucket in the position shown in full lines in Fig. 4, and the movement should be continued on to the uppermost limit as shown by the dotted lines, so that any liquid contained within the bucket will be dumped therefrom through the open-

ing 22. The shaft 24 on being released will return to its normal position, that is, with the pin 28 vertical. The float will then return to the position shown in full lines in Fig. 4. Liquid will begin to seep into the bucket through the hole 25. As the liquid enters the bucket, the latter becomes heavier and the bucket sinks lower and lower as more liquid enters the cylinder until the level of the liquid within the bucket is the same as that within the reservoir. Thus, there is a slow downward movement of the bucket, dependent upon the time required for a given amount of liquid to seep through the hole 25.

Mounted upon the rear wall of the box is a bracket 29 and pivoted thereon are two switch blades 30. The blades 30 constitute the two blades of a make and break contact or switch, one blade is connected to one side of an electric circuit, and the other blade is connected to the other side. The blades normally hang downwardly, and rest against pin 27 if permitted. The pin 27 is an electric conductor, so that when the blades 30 rest thereagainst, the circuit between the blades is closed. The lamp 11 is placed in circuit with the blades 30 so that the latter and the pin 27 constitute a switch controlling the lighting of the lamp 11. Mounted in the standards 20 is a shaft 31. On the end of the shaft is a fiber block 32, this block being arranged to be disposed to meet the blades 30. The block acts as a stop for the blades 30 and limits their downward movement. The end of the shaft 32 extends through an opening in the cover 12 of the box, and is slotted so that the shaft may be turned from the outside of the box by means of a key. There is a frictional fit between the shaft and the standards so that the block 32 will remain in any position in which it is placed.

The device is placed in operation by turning the shaft 24, so that the liquid in the bucket is dumped therefrom. The shaft is released so as to permit the bucket to return to a position such that it floats upon the liquid in the container. The movement of the bucket to its upper position will cause pin 27 to come in contact with the blades 30 and close the electrical circuit furnishing energy to the lamp 11. The circuit is maintained closed while the bucket moves downwardly due to seepage of liquid therein. The contact with blades 30 is maintained until they engage the block 32, whereupon the circuit is opened, the stop block 32 limiting the movement of the blade 30 downwardly, so that after the blade has encountered the block, the pin 27 will break contact with the blades and thereby open the circuit. By turning the shaft 31, the position at which the circuit would be broken can be adjusted.

It is obvious that I have provided a time switch having few mechanical parts. The operation of the switch is dependent upon the action of gravity and the seepage of liquid through a small orifice. By movement of the shaft 31 and its block 32, the time during which the display is illuminated may be adjusted. Although, I have shown the device actuating an electric switch, yet it will be apparent that it may be varied to operate mechanical control devices without departing from the invention.

What I claim is:

1. A time switch comprising the combination of a container for liquid, a float bucket having a discharge opening at the top, said bucket being pivotally mounted in said container on an axis adjacent said opening so disposed that it may float in the liquid in said container and having a seep hole for the passage of liquid into said bucket, whereby said seep hole being disposed so as to be below the level of the liquid in said container when said bucket floats therein, an electrical make and break mechanism operated by said bucket to close an electric circuit while said bucket is maintained in its upper position, and open said circuit when the bucket reaches its lower position.

2. A time switch comprising the combination of a container for liquid, a float bucket having a discharge opening at the top, said bucket being pivotally mounted in said container on an axis adjacent said opening so disposed that it may float in the liquid in said container and having a seep hole for the passage of liquid into said bucket, whereby said seep hole being disposed so as to be below the level of the liquid in said container when said bucket floats therein, an electrical make and break mechanism operated by said bucket to close an electrical circuit while said bucket is maintained in its upper position and open the circuit when the bucket reaches its lower position, and means to adjust the point at which said make and break opens the circuit.

3. A time switch comprising the combination of a container for liquid, a cylindrical bucket having an opening extending along the cylindrical side thereof, said bucket being pivotally mounted in said container on an axis adjacent said opening and parallel to the axis of said bucket and having a seep hole in the cylindrical wall thereof for the passage of liquid, disposed so as to be below the level of the liquid in said container when said bucket floats thereon, and an electrical make and break mechanism operated by said bucket to close a circuit while said bucket is maintained in its upper position and open the circuit when the bucket reaches its lower position.

4. A time switch comprising the combination of a container for liquid, a cylindrical

bucket having an opening extending along one side thereof, said bucket being pivotally mounted in said container on an axis adjacent said opening and parallel to the axis of said bucket and having a seep hole in the cylindrical wall thereof for the passage of liquid, disposed so as to be below the level of the liquid in said container when said bucket floats thereon, electrical make and break mechanism operated by said bucket to close a circuit while said bucket is maintained in its upper position and open the circuit when the bucket reaches its lower position, and means to adjust the point at which said make and break opens the circuit.

5. A time switch comprising the combination of a container for liquid, a cylindrical bucket having an opening extending along the cylindrical side thereof, a shaft pivotally mounted in said container, said bucket being mounted on said shaft adjacent said opening and parallel to the axis of said bucket, means on said shaft for engaging and lifting said bucket, said bucket having a seep hole for the passage of liquid, and electrical make and break mechanism operated by said bucket to close a circuit while said bucket is maintained in its upper position and open the circuit when the bucket reaches its lower position.

6. A time switch comprising the combination of a container for liquid, a cylindrical bucket having an opening extending along the cylindrical side thereof, a shaft pivotally mounted in said container, said bucket being mounted on said shaft adjacent said opening and parallel to the axis of said bucket, means on said shaft for engaging and lifting said bucket, said bucket having a seep hole for the passage of liquid, electrical make and break mechanism operated by said bucket to close a circuit while said bucket is maintained in its upper position and open the circuit when the bucket reaches its lower position, and means to adjust the point at which said make and break opens the circuit.

7. In a time switch, the combination of a container for liquid, and a float bucket having a discharge opening at the top, said bucket being pivotally mounted in said container on an axis adjacent said opening and having a seep hole for the passage of liquid into said bucket.

8. In a time switch, the combination of a container for liquid, a cylindrical bucket having an opening extending along the cylindrical side thereof, said bucket being pivotally mounted in said container on an axis adjacent said opening and parallel to the axis of said bucket and having a seep hole in the cylindrical wall thereof for the passage of liquid.

9. In a time switch, the combination of a container for liquid, a cylindrical bucket having an opening extending along the cylindrical side thereof, a shaft pivotally mounted in said container, said bucket being mounted on said shaft adjacent said opening and parallel to the axis of said bucket, and means on said shaft for engaging and lifting said bucket, said bucket having a seep hole for the passage of liquid.

In witness that I claim the foregoing I have hereunto subscribed my name this 24th day of November, 1922.

FRED T. RICHARDS.