

Jan. 30, 1923.

H. HINCKLEY.
TIMING DEVICE.
FILED JULY 27, 1922.

1,443,573

2 SHEETS-SHEET 1

Fig. 1.

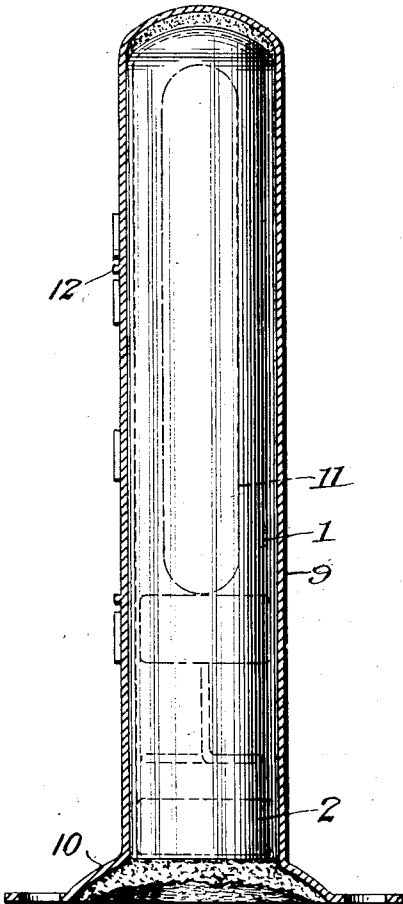


Fig. 2.

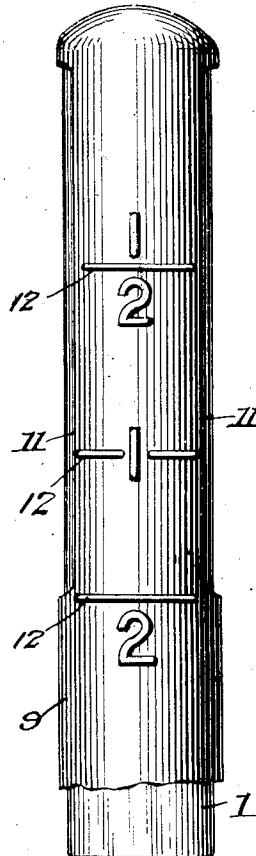


Fig. 3.

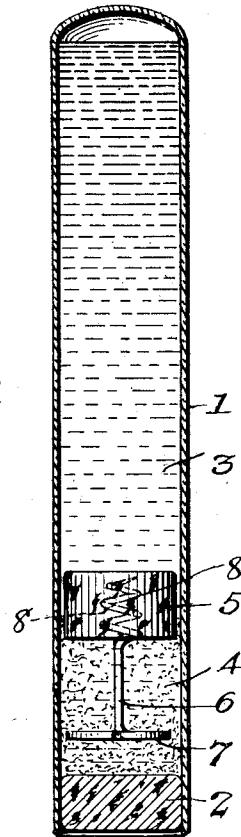
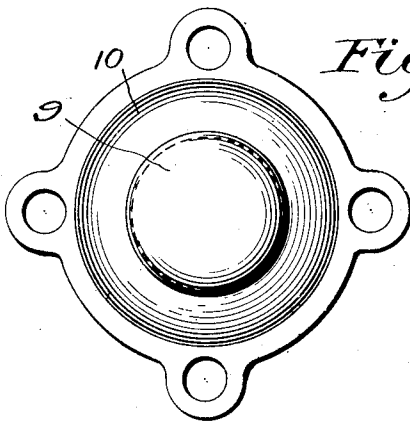


Fig. 4.



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2 SHEETS-SHEET 2

Fig. 6.

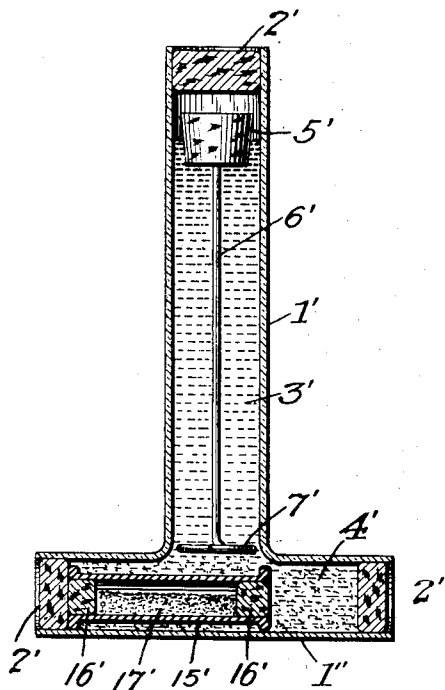


Fig. 5.

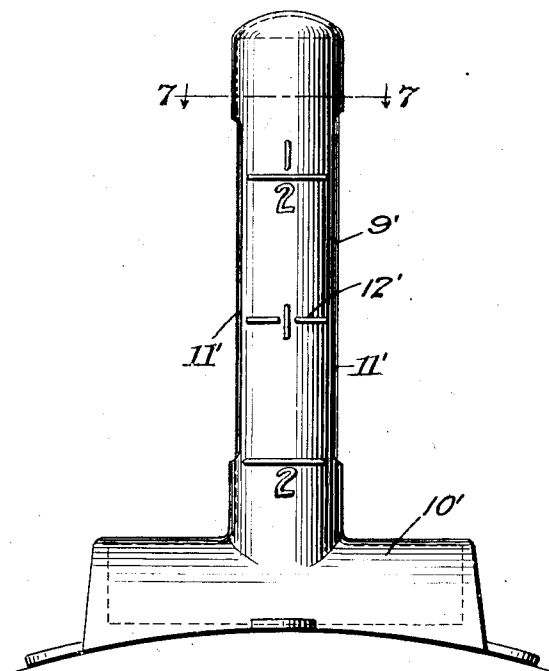


Fig. 8.

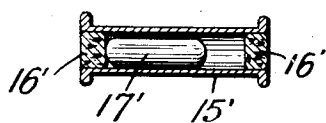
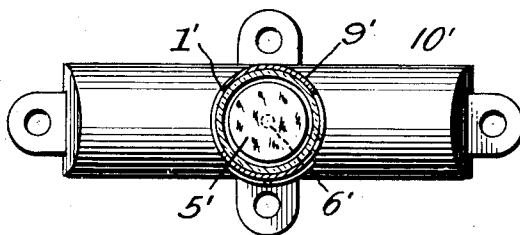


Fig. 7.



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UNITED STATES PATENT OFFICE.

HOWARD HINCKLEY, OF WASHINGTON, DISTRICT OF COLUMBIA.

TIMING DEVICE.

Application filed July 27, 1922. Serial No. 577,911.

To all whom it may concern:

Be it known that I, HOWARD HINCKLEY, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Timing Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to a new and useful device for indicating intervals of time by means of two miscible elements contained in a receptacle, which slowly separate at a predetermined rate, by reason of the difference in specific gravity between the elements, one of which latter is a liquid and the other of which is, preferably, a solid in a state of fine subdivision, which is readily miscible with the liquid upon agitation, and which slowly sinks in the liquid upon standing, the receptacle having associated therewith a scale indicating time elements graduated according to the rate of settlement or sedimentation of the heavier elements.

Two simple and effective forms of the device are illustrated in the accompanying drawings, in which,

Fig. 1 is a sectional elevation;

Fig. 2 is an elevation showing the lower part of the enclosing casing broken away;

Fig. 3 is a sectional elevation of the container or receptacle;

Fig. 4 is a plan view.

Fig. 5 is a side elevation of the modified form of the apparatus.

Fig. 6 is a sectional elevation of the container;

Fig. 7 is a sectional plan view on line 7, 7 of Fig. 5.

Fig. 8 is a sectional elevation of the agitating device.

Referring to Figs. 1 to 4 of the drawings, 1 indicates a tube of glass, celluloid or other transparent material having a closed top and open bottom closed by a cork or other sealing element 2, said tube being nearly filled with two elements, which are readily miscible upon agitation, but which slowly separate upon standing, due to the difference in specific gravity between the elements. In the preferred form of the invention, one of the elements 3 is a liquid, such as water, alcohol, or if desired, a mixture of non-separable liquids, which, like alcohol, does not freeze at ordinary temperatures,

and a solid element 4 in a state of relatively fine sub-division or comminution, which is readily miscible with the liquid, but which slowly sinks in the liquid and separates therefrom by a sharp line of demarcation, by sedimentation, by reason of the greater specific gravity of the solid material. Suitable examples of the miscible and separable elements employed are water and milk of magnesia, alcohol and washed wood ashes, or alcohol and powdered coke. All of these combinations of liquid and solid elements will form an intimate clouded admixture upon agitation, but upon being allowed to stand quietly, the solid materials will gradually sink in the liquid so that the latter clears from the top downward, and a sharp line of demarcation between the clear and clouded portions of the liquid will move progressively down in the liquid according to the rate of settlement or sedimentation of the solid.

It has been found that the rate of such sedimentation is uniform and regular for a given liquid and a given solid, so that, if the receptacle be provided with a scale or other indicia arranged longitudinally thereof, the scale may be calibrated to indicate time intervals by the rate of settlement of the heavier material in the container, as shown by the line of demarcation between the clear liquid and the clouded admixture of liquid and solid. Having determined the rate of settlement of the solid and a given admixture, the time scale may be prepared and applied, either directly to the container 1, or preferably, to an enclosing casing 9, made of metal or the like, into which the receptacle 1 fits and is sealed in place by cement or the like at the top and bottom. The casing 9 is provided with a foot-piece 10, by means of which it is secured in upright position on a support, and in order to give a clear view of the contents of the receptacle 1, and to display the line of demarcation between the clear and clouded portions of the liquid, the casing 9 is provided with sight openings 11 on each side. A time interval scale is preferably formed on the casing, as indicated at 12; in the particular instance shown, the time intervals being one half-hour, one hour, and two hours, respectively. It will be understood that the time scale may be still further subdivided, and also that the two miscible and separable elements in the container may be

so selected as to provide for either a more rapid, or a slower, rate of settlement of the heavier element.

While the line of demarcation between the clear and clouded portions of the liquid will serve as a satisfactory index in conjunction with the time scale, it is preferred to employ a device within the container which will normally float in the mixture of the two elements, but which will sink in the clear liquid element. Such a device is represented by the float 5 of cork or the like, which is suitably weighted by an agitating element comprising a stem 6 with a coiled base portion 7, and a spiral screw section 8 at its upper end, by means of which it is attached to the float. When the two elements within the container are thoroughly admixed, the float 5 will rise to the top of the liquid column, and as the solid material 4 gradually settles, the float will follow the settling solid material, so that the top or bottom edge of the float will constitute a travelling index co-operating with the scale markings on the tube 9; and thereby indicate the successive time intervals required in the settlement of the solid material. The weighting element associated with the float also serves as an effective device for thoroughly agitating and admixing the liquid and solid contents of the receptacle when the latter is agitated.

In the modification shown in Figs. 5 to 8 inclusive the transparent container comprises a vertical member 1' and a horizontal member 1'' connected therewith, the open ends of the T-shaped container being closed by suitable sealing elements 2', to retain the body of liquid 6' and the miscible solid 4'.

The container is enclosed in a suitable casing 9' having two lateral sight openings 11' and a base 10' by means of which the device may be mounted upon and secured to a suitable support, as for example the mud guard or radiator of an automobile.

Located in the horizontal section 1'' of the container and slidable longitudinally therein is a tubular element 15' of glass or the like having open ends surrounded by flanges and closed by suitable stoppers 16', said element containing a body of mercury or the like 17'. The purpose of the slidable element 15' is to effect a thorough agitation and mixture of the liquid and solid contents of the receptacle, and it will be noted that inasmuch as the sedimentation of the solid takes place on and about the agitating device 15' any movement of the latter will stir up the sediment and cause the same to mix with the clear liquid in the vertical member 1' of the container. It will be noted that the element 15' is in effect a loosely sliding piston of somewhat smaller diameter than the lower section of the container and

as said element moves back and forth it exercises what is in effect a pumping action on the sediment, forcing the latter back and forth in the liquid and causing a thorough admixture of the solid and liquid elements. In order to accelerate the admixing of the solid and liquid constituents of the container there is provided a float 5' carrying a pendant rod 6' having a coiled base portion 7', so that any agitation of the vertical column of fluid will cause the float to rise and fall, and the mixing device, formed by the coiled member 7' on the end of the rod 6', to still further agitate and stir up the solid material.

This particular form of the device is especially adapted for used in connection with automobiles and it is preferably secured to one of the mud guards, which is subjected to vibration sufficient to keep the solid and liquid contents in a condition of thorough admixture, so long as the machine is moving. When the machine starts from a position of rest the inertia of the mixing device 15' in the horizontal chamber 1'' will cause the device to slide in the chamber 1'' thereby agitating the solid material which had previously settled in the bottom of the container. This agitation and admixture will be continued by the normal vibration of the car which would cause the float 5' to move up and down carrying with it the mixing device 7'. When the car is brought to a stop or any sudden change in the speed or motion thereof is brought about, the mixing device 15' will be shifted in the chamber 1'' of the container, so that a thorough admixture of the elements within the container would be maintained so long as the vehicle is in motion. As soon as it stops, however, sedimentation of the solid material immediately begins and the rate of sedimentation will indicate the passing of definite time intervals, precisely as in the case of the former device heretofore described. In this particular device the float 5' normally remains at the top of the liquid column where it is constantly subjected to an oscillation of the liquid surface due to the normal vibration of the car. In this case the time intervals would be indicated by a line of demarcation between the clear and clouded portions of the liquid, which will show through the sight openings 11', 11' in the case 9', which latter is provided with a time scale 12'.

The device may be variously employed for indicating the passage of time, but it is particularly adapted for use in connection with automobiles and the like, especially when the latter are subject to parking limitations for definite periods of time. When the device is attached to a mudguard or other suitable portion of an automobile, which is subject to vibration, when the

machine is in operation, the liquid and solid contents of the receptacle will be kept in agitation and maintained in a condition of thorough admixture, so that the liquid will appear clouded throughout, and, if the float or cork indicator is employed therewith, the said indicator will remain at the top of the liquid column in the receptacle. When the vehicle is brought to rest, however, the process of sedimentation or settling of the solid material will immediately begin, and the time which the vehicle has been allowed to stand will be accurately indicated on the time scale by the line of demarcation between the clear and clouded portions of the liquid, or by the position of the float which follows this line of demarcation in the tube, in the form shown in Figs. 1 to 4.

What I claim is:

1. A timing device comprising a receptacle; two miscible elements of different specific gravities, one of which at least is a liquid, therein which automatically separate upon standing; and time interval indicia associated with said receptacle to show the time by the rate of settling of the heavier element.
2. A timing device comprising a receptacle; two miscible elements therein, one of which is a liquid, which separate by gravity upon standing; and a scale associated with said receptacle to indicate time intervals by the rate of settling of the heavier element.
3. A timing device comprising a receptacle; a liquid and a comminuted solid which separate by sedimentation of the solid therein; and a scale associated with said receptacle to indicate time intervals by the rate of settling of the solid.
4. A timing device comprising a sealed receptacle; a liquid and a comminuted solid which separate by sedimentation by the solid therein; and a scale associated with said receptacle to indicate time intervals by the rate of settling of the solid.
5. A timing device comprising a sealed glass tube; a liquid and a comminuted solid

which separate by sedimentation of the solid therein; and a scale associated with said tube to indicate time intervals by the rate of settling of the solid.

6. A timing device comprising a sealed receptacle; a liquid and a comminuted solid which separate by sedimentation of the solid therein; and a casing having a sight opening enclosing said receptacle and having a scale thereon to indicate time intervals by the rate of settling of the solid.

7. A timing device comprising a sealed receptacle; a liquid and a comminuted solid which separate by sedimentation of the solid therein; a casing having a sight opening enclosing said receptacle and having a scale thereon to indicate time intervals by the rate of settling of the solid; a float in said receptacle and an agitating device carried by said float.

8. A timing device comprising a receptacle, a liquid and a comminuted solid which separate by sedimentation of the solid therein, a movable agitating device in the bottom of said receptacle, and a scale associated with said receptacle to indicate time intervals by the rate of settling of the solid.

9. A timing device comprising a receptacle including a vertical section and a transverse bottom section, a liquid and a comminuted solid which separate by sedimentation of the solid therein, a movable agitating device in the bottom of said receptacle, and a scale associated with said receptacle to indicate time intervals by the rate of settling of the solid.

10. A timing device comprising a glass receptacle including a vertical section and a transverse bottom section, a liquid and a comminuted solid which separate by sedimentation of the solid therein a piston like agitator slidable in the bottom section, and a scale associated with said receptacle to indicate time intervals by the rate of settling of the solid.

In testimony whereof I affix my signature.
HOWARD HINCKLEY.