

Feb. 2, 1932.

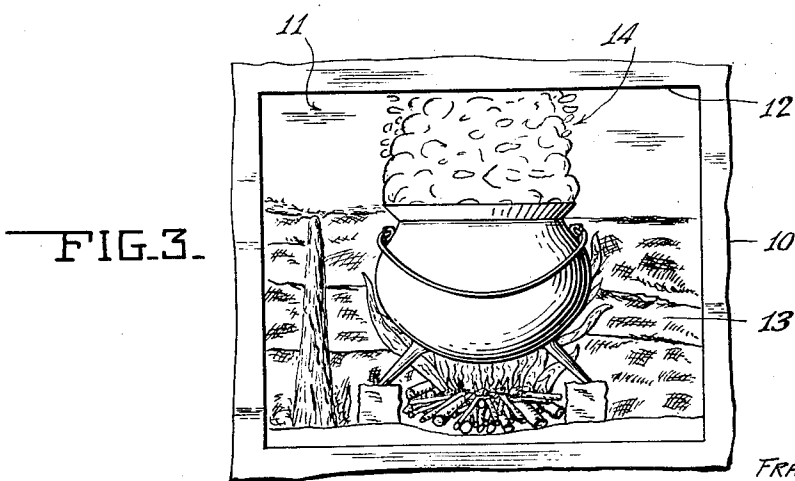
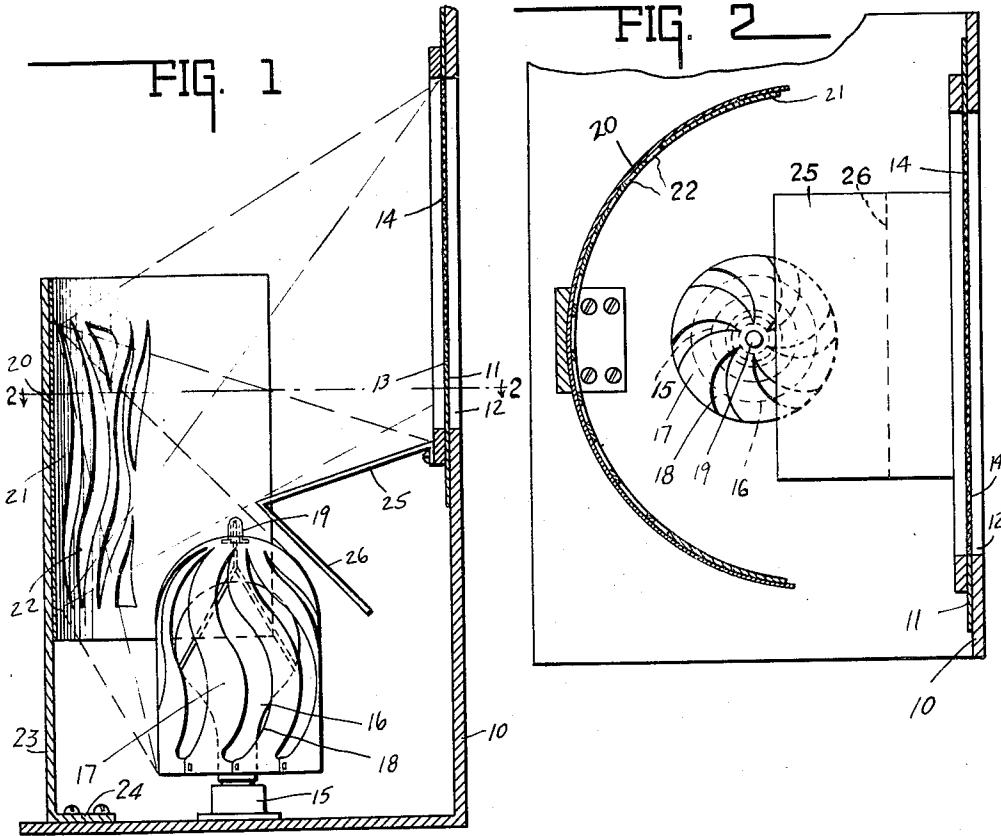
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1,843,279

MOTION SIMULATING DEVICE

Filed Nov. 1, 1929

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 1.

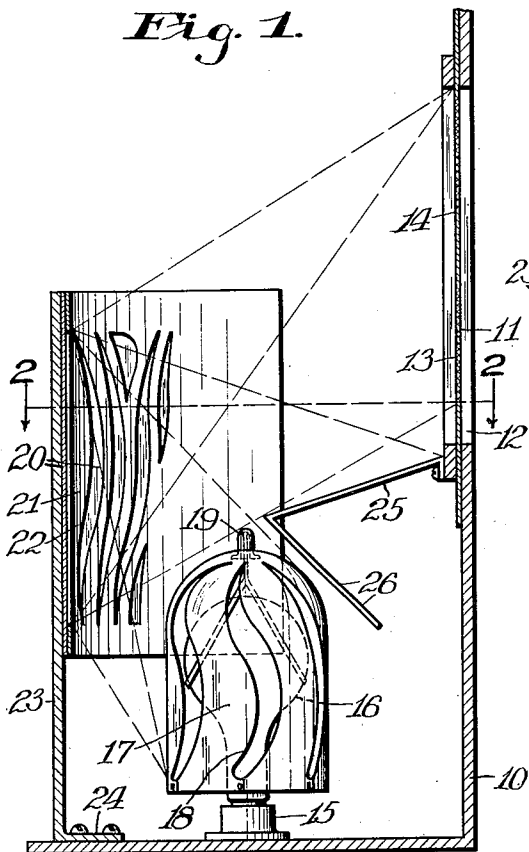


Fig. 2.

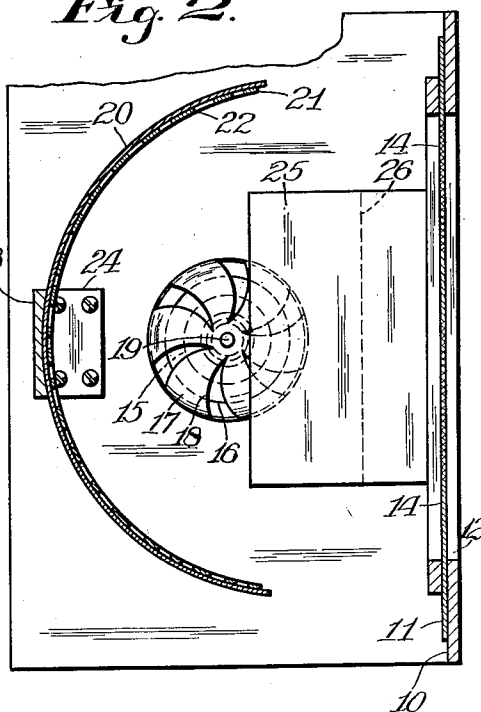
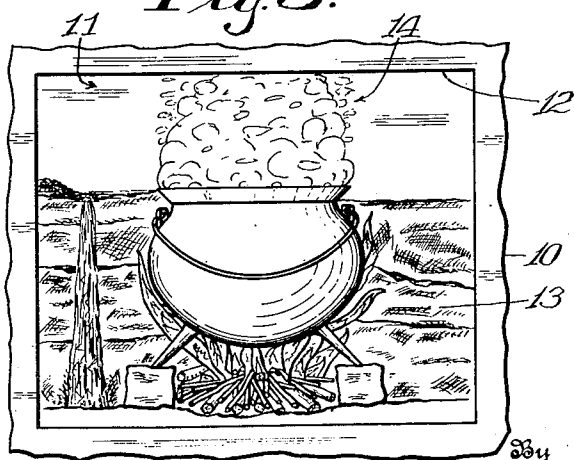


Fig. 3.



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# UNITED STATES PATENT OFFICE

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## MOTION SIMULATING DEVICE

Application filed November 1, 1929. Serial No. 404,102.

This invention relates to an illuminated sign or display which is adapted to simulate motion of objects or of liquid and particularly vapor movement.

5 The chief object of the invention is to provide a device which will simulate liquid movement and particularly vapor movement in a most realistic manner and in such a way that the same can be associated with other portions of a sign or display and incorporated therewith to form a complete picture. The vapor or liquid simulation of movement can thus be incorporated as a material portion of a complete picture representation.

15 The chief feature of the invention consists in the parts and the arrangement of the several parts such that the usual representation of objects, or vapor or liquid movement is so modified that the portions of that representation are blended or merged into each other to most accurately represent and simulate vapor and liquid or other movement.

25 Liquid having considerable density, such as representations of water, milk and the like have singularly well defined outlines when liquid movement is desired to be represented. Vapors, however, which rise or fall, and also sprays and foam representations actually do not travel vertically but usually swing from right to left as the vapor, spray or foam is subjected to lateral resistance such as currents of air and the like, wherefore the path of the ascending and descending path of spray or vapor is variable and the limits of the representation of the vapor shift and blend from one density to another.

35 Heretofore a rotating screen has projected light directly upon a translucent member and has produced a crude representation of liquid movement but such a representation does not simulate a vapor movement.

45 The gist of the present invention consists in the provision of a distorting mirror, a constant source of illumination and a movable screen interposed therebetween and all arranged such that direct light from the source of illumination to the translucent portion of the representation for passage therethrough is substantially prevented, or rather is not required.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

In the drawings Fig. 1 is a vertical sectional view through one form of the invention. Fig. 2 is a transverse sectional view taken on line 2—2 of Fig. 1 and in the direction of the arrows. Fig. 3 is a fragmentary front view of the device showing an example of illustration that might appropriately appear thereon.

10 In the drawings 10 indicates a suitable frame which may be a portion of the housing or the like, and mounted therein is a suitable pictorial representation 11 the front face of which is exposed through the aperture 12 in the housing or frame work and which is illuminated by direct light falling thereon. Various forms of representations may be employed. Herein the representation is illustrated as of a single sheet 11 provided with an opaque portion 13 and a translucent portion 14. The opaque portion 13 upon the front face is suitably legended or provided with pictorial matter as desired and the translucent portion likewise may be similarly provided. The translucent portion may be merely a plain sheet portion of color and the simulation of motion will be faithfully reproduced upon the exposed face after passing through the translucent portion.

20 A lamp socket 15 supports an electric lamp bulb 16 or other source of light and herein a rotating screen or light interrupter having the blades or leaves 17 with apertures 18 therebetween is mounted concentrically with the lamp bulb and preferably is rotatably mounted thereon through the instrumentality of the bearing cap 19. Heated air rising from the lamp bulb 16 passes upwardly and the leaves are so arranged that they act as turbine blades and secure rotation of the screen. The screen may be composed of any suitable material and shape and be of any desired color both upon its exterior and interior, may be opaque or may be silvered for reflecting.

30 The light from the bulb passes through the screen and portions may be reflected from the screen. The directly projected and reflected

rays are thrown upon a distorting reflector or mirror 37. The distorting mirror herein is shown as substantially semi-cylindrical and the same is indicated by the numeral 20 and is provided with a reflecting surface. The mirror may be positioned upright so that its elements are substantially parallel to the representation or the mirror can be tilted either upwardly or downwardly toward or away from the representation as found desirable. Likewise the mirror may be a portion of a cone or may be a plurality of reflecting surfaces arranged in partially closed relation and successively connected. It is not essential for obtaining the proper action that the mirror be positioned as shown in Fig. 2. The mirror may be positioned at right angles to the aforesaid positioning or any other intermediate position may be employed.

When the mirror is positioned as shown or substantially as shown, the intermittent or progressive procession of light from the lamp bulb to the mirror and through the screen is projected to the translucent portion and through the same and represents horizontal variation in vertical rising columns of vapor or liquid. When the screen is tilted at 90° the light variation will be in a vertical direction for simulating wave action and intermediate positioning the screen will secure intermediate variation. Thus predetermined distorting portions secure predetermined simulations and further predetermined positioning of the distorting portions secure predetermined directional simulation. The employment of a mirror, as is well known, creates a reflection that does not have a sharp outline but creates a hazy representation thereof.

The combination of the rotating screen and the distorting mirror obtains a blending of light rays into gradual intensity and gradual lightness in depth with blendings therebetween and through the movement of the screen this representation is movable to secure substantially perfect simulation of vapor movement. To further intensify the simulation, if and when desired, certain modifying constructions may be employed and these may be imposed upon the surface of the distorting mirror. Irregular stripings having substantially the same general direction and either opaqued or colored when applied to the reflecting surface of the mirror will further intensify the action of the mirror. In the present disclosure, however, a stencil 21 having the cut out portions 22 is provided and the reflecting surface is exposed through the cut out portions. In the present disclosure, therefore, the general direction of the stencil openings and the general direction of the screen openings is substantially parallel. They may, however, be transversely arranged or intermediately arranged each different relationship of which

will produce a different variation of the original effect and the one desired. Preferably the mirror has a supporting stem 23 and base 24 of thin metal.

Herein to positively insure that no direct rays of light are thrown upon the translucent portion of the screen there is provided a shield or baffle 25. This baffle may, if desired, be extended as at 26 and may be variously shaped as may be desired and the surface adjacent the lamp bulb may have reflecting properties so that the light discharge upon it may be returned to the screen and thence redirected to the distorting mirror or may be directly reflected to the mirror for further intensifying the motion or action of the representation. In the present invention the light source is offset relative to the representation leaving a clear line of sight between the translucent portion and the distorting mirror. In Fig. 1 certain angular broken lines representing limits of effective illumination are illustrated. The translucent portion of the front panel serves to hide the reflecting mirror from view of an observer positioned in front of the sign.

The invention claimed is:

1. A device suitable for simulating motion comprising a pictorial representation illuminable by light falling thereon and including a translucent portion bearing a portion of the representation and illuminable by light passing oppositely and through said portion, a source of constant illumination and shielded to be prevented from directly illuminating the translucent portion, a distorting mirror hidden by the translucent portion of the representation and arranged to receive illumination from said source and reflect the same to the translucent portion and pictorial representation thereon, and a movable reflecting screen interposed between the source of constant illumination and the mirror and movable to the opposite side of said source for varying the illumination from the mirror to the pictorial representation for simulating motion therein,

2. In a motion simulating device the combination of a pictorial representation having a translucent portion, a distorting mirror construction hidden from view by the translucent portion and provided with predetermined distorting portions whereby predetermined simulation of fluid motion is obtained, and a series of cooperating means arranged to intermittently illuminate the mirror directly for illuminating the translucent portion solely by reflection to obtain the desired fluid motion simulation.

3. In a motion simulating device, the combination of a translucent part bearing a portion of a pictorial illustration, a distorting reflector facing the back of the translucent part and hidden from view thereby from the front of the part, a lighting lamp arranged

between the reflector and the translucent part but on a lower level than the major portion of the reflector and projecting light rays obliquely thereto, and means intermittently interposed between the lamp and the reflector for varying the intensity of light emanating from the lamp.

4. In a motion simulating device, the combination of a translucent part bearing a portion of a pictorial illustration, a distorting reflector facing the back of the translucent part and hidden thereby from view, a constant lighting lamp arranged opposite to the face of the lower portion of the reflector and lower than the translucent part to leave clear space between the major portion of the reflector and said part, movable varying means interposed between the upper portion of the lamp and the reflector, and other means interposed between the lamp and the translucent part for varying the intensity of light emanating from the lamp.

5. In a motion simulating device, the combination of a translucent part bearing a portion of a pictorial illustration designed to represent a moving object, a distorting reflector facing the back of the translucent part and being invisible through the part, a constant lighting lamp arranged opposite to the face of the lower portion of the reflector and lower than the translucent part, an opaque shield arranged between the lamp and the translucent part and having an inclined reflecting portion situated partially above the lamp, and varying means intermittently interposed between the lamp and the reflector and said reflecting shield portion for varying the intensity of light passing from the lamp to the reflector.

6. In a motion simulating device, the combination of a translucent part bearing a portion of a pictorial illustration, a reflector facing the back of the translucent part, a lighting lamp arranged opposite to the lower portion of the reflector and lower than the translucent part, a shield extending from the lower portion of the translucent part at an inclination and above the lamp and having a portion extending downward at an opposite inclination to deflect light of the lamp onto the reflector, and a light-interrupting rotor mounted upon the lamp.

7. In a motion simulating device, the combination of a translucent part bearing a portion of an illustration, a distorting reflector arranged behind the translucent part comprising a main part having a reflecting face and a non-reflecting stencil part on the face of the main part having openings therein exposing the reflecting face, a lighting lamp arranged opposite to the face of the lower portion of the reflector, a rotor mounted on the lamp, and a shield stationarily arranged between the translucent part and the lamp, the shield including an inclined portion deflect-

ing light rays from the lamp to the reflecting face through said openings.

8. A device for simulating motion having a translucent panel bearing a representation designed for simulating motion, a distorting main reflector arranged behind and facing towards the panel to reflect light rays obliquely onto the back of the panel, a lighting lamp arranged off from the direct path of the reflected rays of light passing to the panel and projecting light rays obliquely to the reflector, a secondary reflector arranged between the lamp and the back of the panel and deflecting light from the lamp obliquely onto the main reflector, the secondary reflector being opaque and intercepting rays of light passing directly towards the panel, and a rotary light-interrupter mounted upon the lamp and co-operating with both the reflectors to modify the reflected light rays passing onto the translucent panel.

9. A device suitable for simulating motion comprising a pictorial representation illuminable by light falling thereon and including a translucent portion bearing a portion of the representation and illuminable by light passing oppositely therethrough, a source of illumination, a mirror hidden from view by the pictorial representation, and means including a rotary screen interposed between the light source and the mirror and on the opposite side of the light source for varying the illumination received and reflected thereby to the translucent portion and the representation thereon for obtaining simulation of motion, said means and source being arranged for solely indirectly illuminating the translucent portion.

In witness whereof, I have hereunto affixed my signature.

FRANK A. GRITT.

**CERTIFICATE OF CORRECTION.**

Patent No. 1,843,279.

February 2, 1932.

**FRANK A. GRITT.**

It is hereby certified that the above numbered patent was erroneously issued to "Gritt-Ragsdale & Company, Inc., of Indianapolis Indiana, a corporation," where- as said patent should have been issued to Gritt, Inc., of Indianapolis, Indiana, a corporation of Indiana, as assignee by mesne assignments of the entire interest in said invention, as shown by the records of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 4th day of October, A. D. 1932.

(Seal)

**M. J. Moore,**  
Acting Commissioner of Patents.