

(19)



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



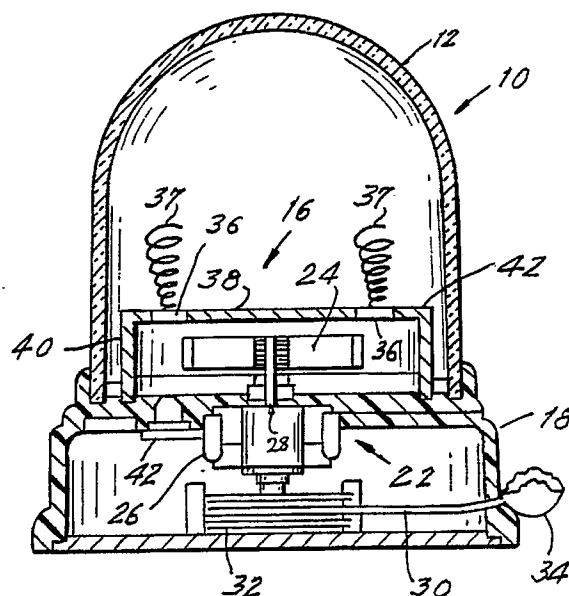
(11) Publication number:

**0 444 773 A1**

(12)

**EUROPEAN PATENT APPLICATION**(21) Application number: **91300509.6**(51) Int. Cl.<sup>5</sup>: **G09F 19/02, A63H 33/00,  
B43M 9/00**(22) Date of filing: **23.01.91**(30) Priority: **26.02.90 US 485132**(43) Date of publication of application:  
**04.09.91 Bulletin 91/36**(84) Designated Contracting States:  
**AT BE CH DE DK ES FR GB GR IT LI LU NL SE**(71) Applicant: **THE MERTON COMPANY LIMITED**  
**6/FI. Vailant Ind. Centre 2-12 Au Pui Wan**  
**Street**  
**Fo Tan Shatin (N.T.)(HK)**(72) Inventor: **Lam, Yu Shun**  
**Flat A, 13/FI., Block 3 Richland Gardens**  
**Kowloon Bay, Kowloon, Hong Kong(HK)**(74) Representative: **Davies, Jonathan Mark et al**  
**Reddie & Grose 16 Theobalds Road**  
**London WC1X 8PL(GB)**(54) **Display device.**

(57) A display device (10) for creating a realistic, interesting and aesthetically pleasing visual effect. In a preferred embodiment, a figurine (14) or the like is supported on a platform (16) within a main portion of fluid and a plurality of vortexes are created within the main portion of fluid by swirling a separated portion of fluid and communicating the separated portion of fluid with the main portion of fluid through a plurality of apertures (36) through the platform (16).

**FIG. 2****EP 0 444 773 A1**

## BACKGROUND OF THE INVENTION

### Field of the Invention:

The present invention relates to a display device for creating a realistic, interesting, and aesthetically pleasing visual effect.

### Description of the Related Art:

Display devices for artificially creating the appearance of a snowstorm or the like and for displaying a figurine or the like are well known. U.S. Patent No. 2,435,612 to Snyder discloses an early example of such a device. In Snyder's device, a transparent enclosure is completely filled with water. Snow-like particles are suspended within the water so that when the water is agitated, the visible particles swirl around a figurine supported within the enclosure (in this case, a replica of the Statue of Liberty) to create the appearance of a snow storm. The entire device has to be agitated to create this effect. The disclosure of U.S. Patent No. 2,435,612 is incorporated herein by reference.

British Patent Specification No. 1,083,064 to Oriental Agents Ltd. (the disclosure of which is incorporated herein by reference) discloses an improvement over Snyder's device. Specifically, a fan is used to maintain the swirling motion of snow-like particles around a figurine so that the entire device need not be agitated. U.S. Patent No. 4,817,311 to Ong also discloses a device in which a fan is used to swirl snow-like particles within a transparent enclosure while displaying a figurine.

The prior art devices are unsatisfactory because they do not create a sufficiently realistic, interesting and aesthetically pleasing visual effect.

## SUMMARY OF THE INVENTION

The present invention relates to a display device, including (A) an enclosure; (B) fluid located within the enclosure; (C) visible particles suspended within the fluid; and (D) vortex creating means for creating a plurality of separate vortexes within the enclosure.

Preferably, the particles include snow-like particles and the fluid includes liquid. Preferably, the enclosure is transparent and dome-shaped. Preferably, the vortex creating means includes a fan.

The present invention also relates to a display device and a method of operating a display device, the method including the steps of: (A) supporting a figurine or the like on a platform within a main portion of fluid; and (B) creating a plurality of vortexes within the main portion of fluid by (1) swirling a separated portion of fluid and (2) communicating the separated portion of fluid with the

main portion of fluid through a plurality of apertures through the platform.

Preferably, the fluid includes liquid. Preferably, particles are suspended within the fluid and create the appearance of a snowstorm within the main portion of fluid.

The present invention also relates to a display device, including: (A) a housing; (B) swirling means for swirling a separated portion of fluid, the swirling means being located within the housing; and (C) a platform for (1) separating the swirling means from a main portion of fluid and (2) supporting a figurine or the like within the main portion of fluid, the platform including a plurality of apertures for providing fluid communication between the separated portion of fluid and the main portion of fluid, the apertures creating a plurality of vortexes within the main portion of fluid during operation of the swirling means.

Preferably, the housing includes: (1) a transparent enclosure for containing the separated portion of fluid and the main portion of fluid; and (2) a base for supporting the enclosure and the platform. Preferably, the enclosure is dome-shaped. Preferably, the swirling means includes a fan. Preferably, the fan includes fan blades and rotating means for rotating the fan blades, the fan blades being located between the platform and the base, the rotating means being located within the base. Preferably, the rotating means includes a pull-string actuated gear box. Preferably, the platform includes a top surface, the apertures being located within the top surface. Preferably, the top surface includes a periphery, the apertures being symmetrically located in the vicinity of the periphery. Preferably, the apertures include four symmetrical and evenly spaced apart apertures. Preferably, the top surface is flat, the platform including cylindrical side walls which support the top surface above the swirling means.

## BRIEF DESCRIPTION OF THE DRAWINGS

For the purpose of illustrating the invention, there is shown in the drawings a form which is presently preferred, it being understood, however, that the invention is not limited to the precise arrangement and instrumentality shown.

Fig. 1 is a front view of a display device, with a figurine, in accordance with the invention;

Fig. 2 is a longitudinal cross-sectional view of the display device of Fig. 1, without the figurine; and

Fig. 3 is a partial top view of a platform of the display device of Fig. 2, illustrating a preferred relationship between openings through the platform and a fan located underneath the platform.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings, wherein like reference numerals indicate like elements, there is shown in Fig. 1 a display device constructed in accordance with the principles of the present invention and designated generally at 10. The display device 10 includes a domed transparent enclosure 12 which is completely filled with water or other fluid (not numbered), a figurine 14 supported on a platform 16 for display within the enclosure 12 and an opaque base 18 for supporting the enclosure 12 and the platform 16 and housing a drive means (described below). In the preferred embodiment, snow-like particles 20 are suspended within the water to create the effect of a snow storm, or the like, when agitated.

A fan for agitating the water is indicated generally at 22 (Fig. 2). The fan 22 has fan blades 24 which, when rotated, swirl a portion of fluid which is separated by the platform 16 from the main portion of fluid within the enclosure 12.

The fan blades 24 are connected to a gear box 26 by a pin 28 which extends through the top of the base 18. A string 30 and a pulley 32 are provided for manually operating the gear box 26. The gear box 26, the pulley 32, and the string 30 are housed within the base 18.

A ball 34 which enables the operator to easily grip and pull on the string 30 is located outside of the base 18. In operation, an operator pulls on the ball 34 to rotate the pulley 32 via the string 30, to drive the gear box 26. The gear box 26, in turn, rotates the fan blades 24 via the pin 28. The rotating fan blades 24 swirl the separated portion of fluid located between the platform 16 and the base 18.

The platform 16 has a plurality of apertures 36 for providing fluid communication between the separated portion of water between the platform 16 and the base 18 and the main portion of fluid within the enclosure 12. As a result, when the fan blades 24 swirl the separated portion of fluid, a plurality of separate vortexes 37 are created within the main portion of fluid, causing the particles 20 to agitate within the transparent enclosure 12 in a very realistic and interesting way. In the preferred embodiment, if the plurality of apertures 36 were not present, the desired separate vortexes 37 would not be created.

Four apertures 36 are preferred, but a greater or lesser number (not less than two) may be provided. For the sake of illustration, only two vortexes 37 are illustrated in the drawings, but the actual number of vortexes 37 corresponds to the number of apertures 36.

The vortexes 37 are preferably parallel to and

spaced apart from one another so as to cause a more realistic movement of the particles 20 within the enclosure 12. In a real-life snowstorm, there are a plurality of vortexes and snow swirls in a myriad of directions. By creating the vortexes 37, the present invention mimics this effect, and does so in a simple and inexpensive manner.

The configuration of the platform 16, the domed enclosure 12, the apertures 36 and the fan blades 24 is very important. The platform 16 can support the figurine 14 for display within the transparent enclosure 12 while permitting the fluid to communicate through the platform 16 to create the separate vortexes 37. To perform these functions, the platform 16 preferably has a flat top 38 supported by cylindrical sides 40, with the four apertures 36 (Fig. 3) symmetrically and equally spaced apart with respect to each other in the vicinity of the periphery 42 of the top 38 of the platform 16. As illustrated in Fig. 3, the apertures 36 are preferably located above outermost portions 44 of the fan blades 24.

A plug closes the enclosure 12 after the enclosure 12 is filled during assembly.

To increase the aesthetically pleasing visual effect of the display device 10, the platform 16 and the fan blades 24 can be made of clear material and the platform 16 can support decorative snow-like material, as illustrated in Fig. 1.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof. Accordingly, reference should be made to the appended claims, rather than to the foregoing specification, as indicating the scope of the invention.

## Claims

1. A display device, comprising:
  - (A) a housing;
  - (B) swirling means for swirling a separated portion of fluid, said swirling means being located within said housing; and
  - (C) a platform for (1) separating said swirling means from a main portion of fluid and (2) supporting a figurine or the like within said main portion of fluid, said platform including a plurality of apertures for providing fluid communication between said separated portion of fluid and said main portion of fluid, said apertures creating a plurality of vortexes within said main portion of fluid during operation of said swirling means.
2. The display device of claim 1, wherein said housing includes:
  - (1) a transparent enclosure for containing said separated portion of fluid and said

main portion of fluid; and  
(2) a base for supporting said enclosure and  
said platform.

3. The display device of claim 2, wherein said enclosure is dome-shaped. 5
4. The display device of claim 2, wherein said swirling means includes a fan. 10
5. The display device of claim 4, wherein said fan includes fan blades and rotating means for rotating said fan blades, said fan blades being located between said perform and said base, said rotating means being located within said base. 15
6. The display device of claim 5, wherein said rotating means includes a pull-string actuated gear box. 20
7. The display device of claim 2, wherein said platform includes a top surface, said apertures being located within said top surface. 25
8. The display device of claim 7, wherein said top surface includes a periphery, said apertures being symmetrically located in the vicinity of said periphery. 30
9. The display device of claim 8, wherein said apertures include four symmetrical and evenly spaced apart apertures. 35
10. The display device of claim 9, wherein said top surface is flat, said platform including cylindrical side walls which support said top surface above said swirling means. 40

40

45

50

55

FIG. 1

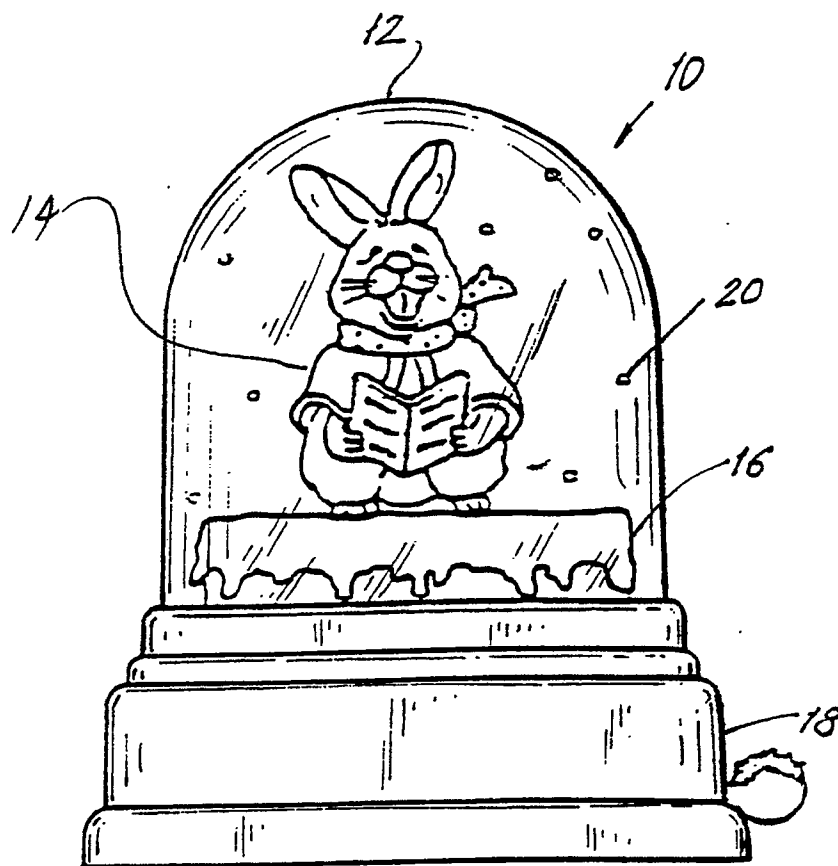


FIG. 2

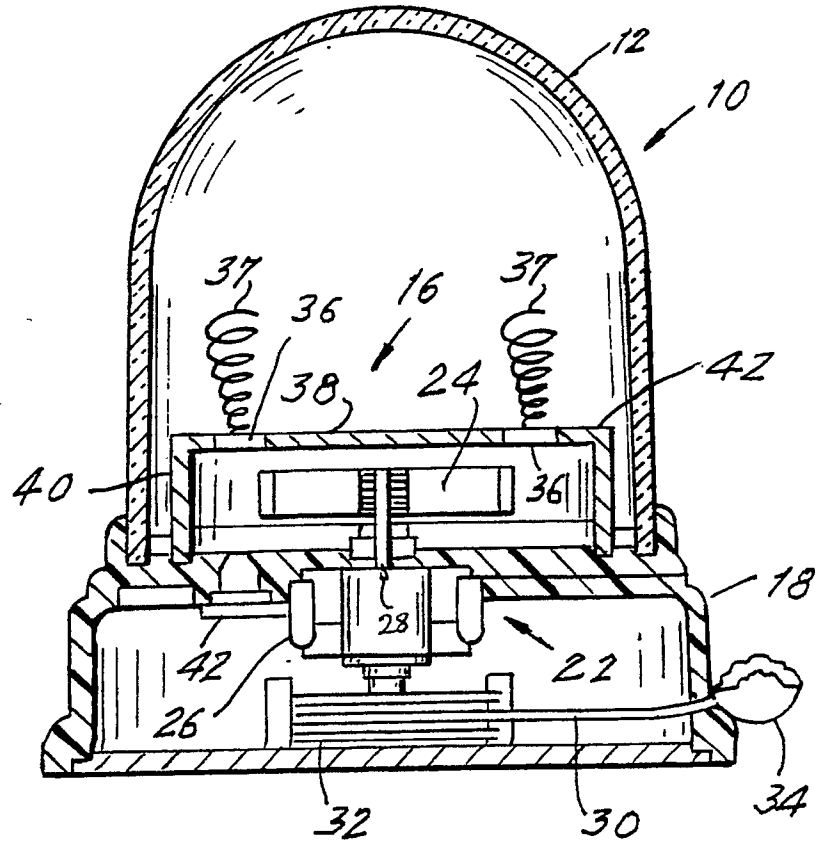
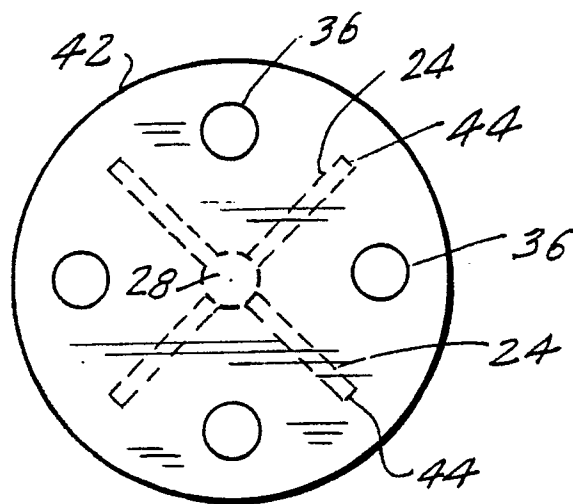


FIG. 3





European  
Patent Office

## EUROPEAN SEARCH REPORT

Application Number

**EP 91 30 0509**

| DOCUMENTS CONSIDERED TO BE RELEVANT   |   |                              |   |
|---|---|------------------------------|---|
| Category  | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim            | CLASSIFICATION OF THE APPLICATION (Int. Cl.5)               |
| A,D   | US-A-4 817 311 (R. ONG S.T.)<br>* whole document *<br>-----                   | 1-5                          | G 09 F 19/02<br>A 63 H 33/00<br>B 43 M 9/00                 |
| A   | US-A-2 518 502 (W.M. SNYDER)<br>* whole document *<br>-----                   | 1                            |   |
| A,D   | US-A-2 435 612 (W.M. SNYDER)<br>* whole document *<br>-----                   | 1                            |   |
|   |   |                              | TECHNICAL FIELDS<br>SEARCHED (Int. Cl.5)                    |
|   |   |                              | A 63 H 33/00<br>B 43 M 9/00<br>G 09 F 19/00<br>G 09 F 19/02 |
| The present search report has been drawn up for all claims  |   |                              |   |
| Place of search   |   | Date of completion of search | Examiner  |
| Berlin  |   | 22 April 91                  | TAYLOR P I  |
| <div>CATEGORY OF CITED DOCUMENTS</div> <div>X : particularly relevant if taken alone</div> <div>Y : particularly relevant if combined with another document of the same category</div> <div>A : technological background</div> <div>O : non-written disclosure</div> <div>P : intermediate document</div> <div>T : theory or principle underlying the invention</div> <div>E : earlier patent document, but published on, or after the filing date</div> <div>D : document cited in the application</div> <div>L : document cited for other reasons</div> <div>&amp; : member of the same patent family, corresponding document</div> |   |                              |   |