April 3, 1951 P. HUSSEY 2,547,468

SECOND-MARKING CLOCK

Filed Feb. 26, 1947

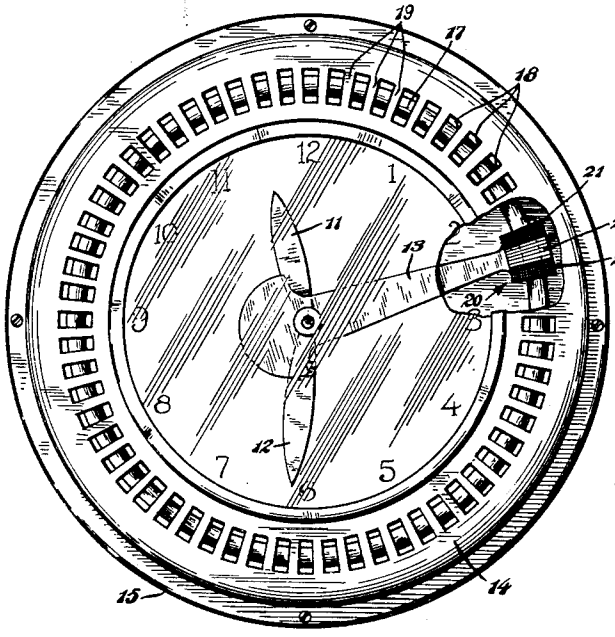



Fig. 1.

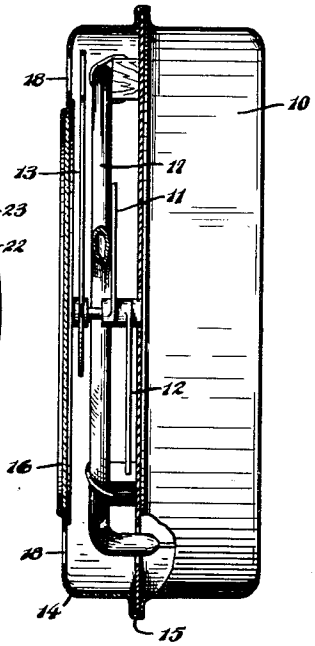



Fig. 2.

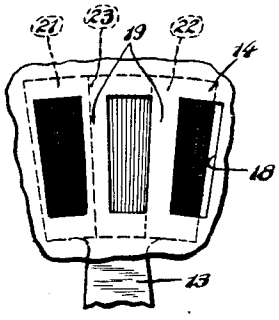



Fig. 3.

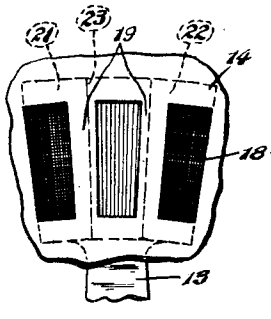



Fig. 4.

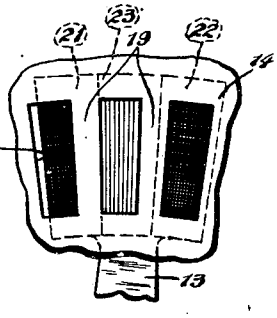



Fig. 5.

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## SECOND-MARKING CLOCK

Paul Hussey, Indianapolis, Ind.

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6 Claims. (Cl. 58—50)

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The present invention relates to a display device, which finds its optimum embodiment in a second-marking clock. The primary object of the invention is to provide, in such a device, means whereby it will be made to appear that an element which is driven continuously at a uniform velocity about a center, moves, instead, in a series of jerks and jumps. A further object of the invention is to provide an illuminated means for attracting attention in a novel fashion. Further objects of the invention will appear as the description proceeds.

To the accomplishment of the above and related objects, my invention may be embodied in the form illustrated in the accompanying drawings, attention being called to the fact, however, that the drawings are illustrative only, and that change may be made in the specific construction illustrated and described, so long as the scope of the appended claims is not violated.

Fig. 1 is a front elevation of an embodiment of my invention, parts being broken away for clarity of illustration;

Fig. 2 is a side elevation thereof, partly in central section; and

Figs. 3, 4 and 5 are enlarged fragmental front elevations of a portion of the illustrated structure, showing the parts in various progressive positions.

Display devices, characterized by a source of illumination and a moving element positioned between that source and a point of observation and constructed and designed to create optical illusions of various kinds are well known in the art, and have become commercially popular in recent years. All of such devices known to me heretofore have been relatively complicated and expensive. All of such devices heretofore known to me have been of such character as to create the impression of moving light throughout the annular path of the moving element. Most of such devices are embodied in clocks; and my invention is herein illustrated, and will be described, as similarly embodied; but it is to be understood that it may alternatively be embodied in any other desired form.

According to my invention, an extremely simple structure produces a novel impression. By the provision of special means, carried upon an element movable continuously, and at uniform speed, in an endless path, I produce the impression of an element moving through that path in a series of jumps or jerks between uniformly spaced observation stations along that path.

Referring more particularly to the drawings,

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it will be seen that I have illustrated a housing 10 enclosing a standard clock works (not shown) providing the usual spindles projecting from the housing for carrying an hour hand 11, a minute hand 12, and a second hand 13. Associated with the housing 10 is an annular, opaque mask 14 secured to the housing 10 in any suitable manner as, for instance, through the medium of the flange 15. The inner periphery of the mask 14 will preferably be formed and arranged to carry a sheet 16 of glass or other suitable transparent material.

Mounted in any suitable manner within the mask 14 is a light source which, in the preferred embodiment of my invention, takes the form of a luminous tube 17 of circular conformation; and the mask 14 is provided with an annular series of windows 18 substantially coincident with said tube, so that the luminosity of said tube is directly visible through said windows.

The windows 18 are arranged, as is clearly to be seen in Fig. 1, in a continuous annular series, and are of uniform angular extent and uniformly angularly spaced apart. In the illustrated embodiment of the invention, the angular extent of each window is approximately three degrees, forty minutes, and the angular extent of each space 19 between adjacent windows is approximately two degrees, twenty minutes. Thus, in the clock illustrated, the median radial lines of adjacent windows are spaced six degrees from each other, so that the hand 13 will pass one window each second.

A light obstructing device 20 is carried at the outer end of the hand 13 in such a position as to follow a path coincident with the tube 17 and the series of windows 18. Said light obstructing device comprises a pair of segments 21 and 22 angularly separated from each other. In the preferred embodiment of my invention, the segments 21 and 22 will be opaque, and a third segment 23, having light filtering characteristics, fills the space between the segments 21 and 22. While I prefer the segments 21 and 22 to be black and completely opaque, and the segment 23 to be red and translucent, partially satisfactory results can be obtained if segment 23 has light-obstructing characteristics substantially different from the light-obstructing characteristics of the segments 21 and 22. Thus, the segments 21 and 22 may be one color while the segment 23 is another color; the segments 21 and 22 may be colored or opaque while the segment 23 is uncolored and transparent; or the segments 21 and 22 may be colored or opaque while the space between them may be entirely open. However, as stated, I prefer to

make the segments 21 and 22 black and the segment 23 red and transparent. As is clearly to be seen upon an inspection of Figs. 3, 4 and 5 the total angular extent of the light-obstructing means 20 is equivalent to that of three successively arranged windows and the two spaces between them. The segments 21, 22 and 23 are of equal angular extents, each being five degrees, thirteen minutes, twenty seconds.

As the unit 20 travels, at uniform angular velocity, through its path, the segment 23 completely covers a window just before the segment 22 completely cover the next adjacent window, and shortly after the section 21 has completely covered the preceding adjacent window. Now, the observer sees the section 22 slowly complete coverage of the window which it has entered, while the section 21 slowly uncovers the window which it is leaving; but because the segment 23 has an angular extent substantially greater than the angular extent of the window with which it is associated, the intermediate window remains closed, or colored, until, as is shown in Fig. 5, the segment 21 has partially uncovered the window with which it is currently associated. Next, the segment 23 begins to uncover the window with which it is associated, and an instant later, the section 22 begins to uncover its window while the section 21 completes the clearance of its window.

The result of this arrangement of parts is that it appears to the observer that the light-obstructing means associated with the window intermediate those with which the segments 21 and 22 are associated, pauses or dwells upon that intermediate window. The attention is caught by the spot of colored light set off and accentuated between the dark spots produced by the segments 21 and 22, and the aggregate impression is that that spot of colored light is moving about the annular path in a series of jumps, with an extended dwell at each window.

I claim as my invention:

1. In a display device, a housing including an annular mask, said mask being provided with an annular series of translucent windows, said windows being of uniform angular extent and being equally angularly spaced apart, a source of illumination positioned to cast light through said windows, a movable sweep concentric with said mask, means for driving said sweep about said center at a uniform velocity, and light-obstructing means carried by said sweep upon a path interposed between said light source and said windows, said light-obstructing means including two substantially opaque segments, each having an angular extent at least as great as that of one of said windows, said segments being angularly spaced apart to define therebetween a translucent segment having an angular extent substantially greater than the angular extent of a window.

2. The device of claim 1 including light-filtering means fitting the space between said segments.

3. The device of claim 1 in which the adjacent edges of adjacent windows are angularly spaced from each other approximately two degrees, twenty minutes, the angular extent of each window being approximately three degrees, forty minutes, and the angular extent of the space between said opaque segments being approximately five degrees, thirteen minutes.



4. The device of claim 3 in which the angular extent of said light-obstructing means is approximately fifteen degrees, forty minutes.

5. In a display device, a housing including an annular mask, said mask being provided with an annular series of translucent windows, said windows being of uniform angular extent and being equally angularly spaced apart, a source of illumination positioned within said housing to cast light through said windows, a movable sweep concentric with said mask, means for driving said sweep about said center at a uniform velocity, and light-obstructing means carried by said sweep upon a path interposed between said light source and said windows, said light-obstructing means including two segments of substantially equivalent light-obstructing characteristics, each having an angular extent at least as great as that of one of said windows, and an intermediate segment of substantially different light-obstructing characteristics filling the space between said two segments and having an angular extent substantially greater than the angular extent of a window.

6. In a display device, a housing including an endless mask provided with an endless series of translucent windows, said windows being of uniform extent in the direction of length of said mask and being substantially uniformly spaced apart in said direction, a source of illumination positioned within said housing to cast light through said windows, a movable sweep mounted to travel on a path coincident with said series of windows, means for driving said sweep along said path at uniform velocity, and light-obstructing means carried by said sweep and interposed between said light source and said mask, said light-obstructing means including two segments spaced apart in the direction of travel of said means and having certain light-obstructing characteristics, each of said segments having a dimension, in the direction of travel of said means, at least as great as the corresponding dimension of a window, and the space between said segments having a dimension, in said direction, substantially greater than the corresponding dimension of a window and having substantially different light-obstructing characteristics.

PAUL HUSSEY.


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