Oct. 5, 1937. E. P. S. HOYT 2,094,890

DISPLAY DEVICE

Filed Oct. 5, 1935

Fig. 1.

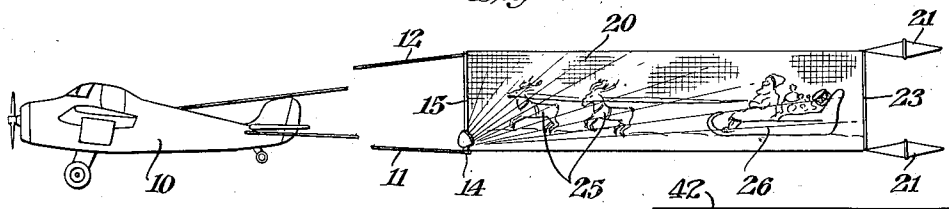


Fig. 2.

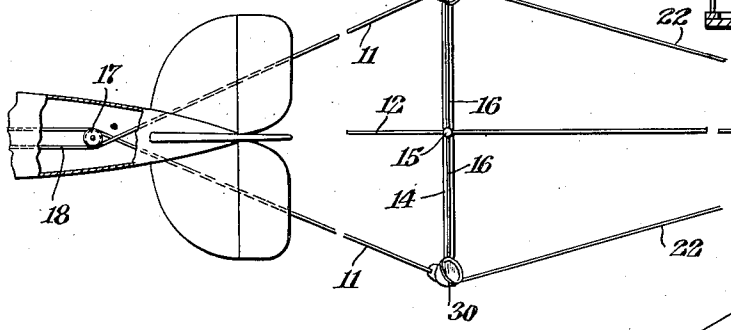


Fig. 7.

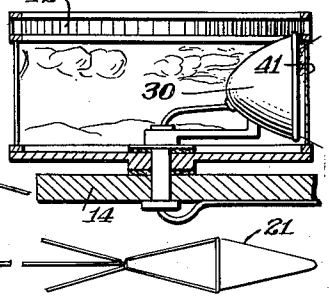


Fig. 3.

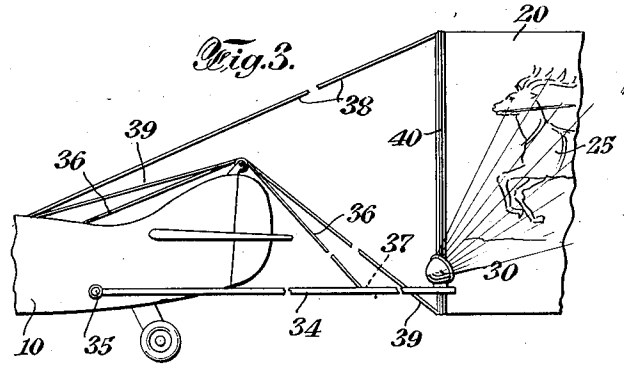


Fig. 6.

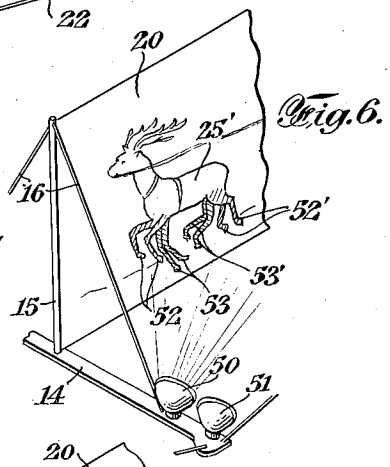


Fig. 4.

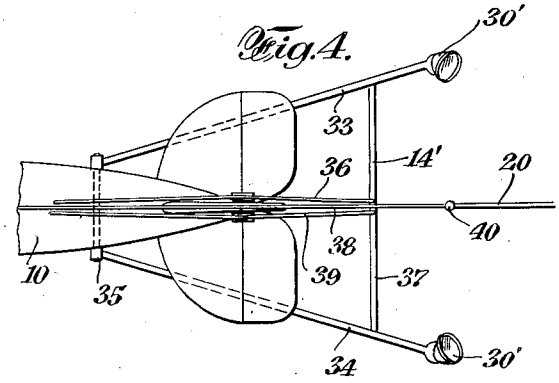
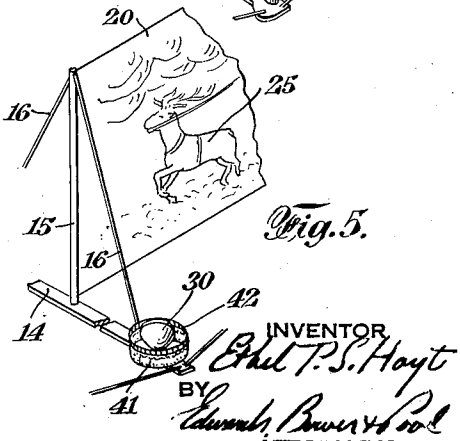


Fig. 5.



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DISPLAY DEVICE

Ethel P. S. Hoyt, Darien, Conn.

Application October 5, 1935, Serial No. 43,753

3 Claims. (Cl. 40—127)

This invention relates to display means and particularly to such means adapted to be towed through the air by dirigibles, airplanes and the like.

The object of the invention is to provide a device adapted to be towed at desired heights within easy range of vision and bearing figures prominently illuminated in a manner to create the appearance that the figures are independently traveling through the air.

Further objects of the invention particularly in the supporting and illuminating means for the reflective figures will appear from the following specification taken in connection with the accompanying drawing, in which

Fig. 1 is an elevational side view of one embodiment of the invention,

Fig. 2 is a plan view of the apparatus shown in Fig. 1 with parts broken away,

Fig. 3 is a partial view of a modified form,

Fig. 4 is a plan view of the form shown in Fig. 3,

Fig. 5 is a partial perspective view showing a modification of the lighting means,

Fig. 6 is a partial perspective view showing a further modification of the lighting effects, and

Fig. 7 is a sectional view showing apparatus for casting moving shadows on the display device.

In the specific embodiment of the invention shown in the drawing, an airplane 10 is connected by draw-ropes 11 and stay-rope 12 to the cross piece 14 and vertical strut 15 held together in right-angled relation by the side-stays 16. The draw-ropes 11 are in one continuous strip looped around the grooved wheel 17 normally permitting the cross piece 14 to turn horizontally with relation to the plane, and control rope 18 around a wheel coaxial with the wheel 17 may be used to turn the wheel 17 and so angularly adjust the cross piece 14 in a horizontal plane. The vertical pole or strut 15 carries a long banner device 20 preferably of flexible material, such as netting or other fabric, and colored dark so as not to be light reflective. At the end of the banner 20 is a vertical stiffener 23 carrying the drag devices of the parachute or wind-stocking type designated generally 21, these devices acting to maintain the banner 20 stiffened against flapping.

On the sides of the banner strip 20 are fastened cut-outs 25, 26 of a light reflecting material and embodying, for instance, a representation of Santa Claus in a sleigh 26 drawn by reindeer 25. Lamps 30 mounted at each end of the cross piece 14 are fixed in position to illuminate the light reflecting material 25, 26 on each side of the banner, the power for the illumination being supplied from the airplane generator and battery. The side guy ropes 22 connected between the ends of the cross piece 14 and the stiffener 23 normally retain the cross piece 14 in right angled relation to the banner 20 so as to properly maintain the illumination of the lamps 30 on the light reflecting material.

The illumination of the light reflecting material will be sufficiently brilliant in contrast to the nonreflective qualities of the banner and other apparatus so that when the banner is towed at night and illuminated only the reflecting material 25, 26 will be seen.

The towing plane will be kept as dark as possible and flown over desired areas, for instance, city or suburban communities previously covered by announcement of the expected time of the trip. The lamps 30 are separately controllable by the operator in the plane to be turned on and off or varied in intensity of illumination as desired, for example, for gradual increase on approach or fading as the plane departs from a given locality.

Various methods of attachment for towing may be used, and in Figs. 3 and 4 modified means is illustrated providing a frame 33, 34 adjustably supporting the lights 30', and pivoted at 35 to the tail of the towing plane. A rope 36 connected to cross member 37 determines the angle of the frame relative to the plane, and ropes 38, 39 connected to the ends of the vertical pole or strut member 40 carrying the banner are adjustable to vary the position of the banner relative to the lights.

The appearance of movement of the illuminated cut-out may be accentuated by casting shadows in the lighting, which shadows travel backward from the front to the rear of the banner. For instance, as shown in Fig. 5, a rotor 41 mounted on the base of the lamp 30 has a transparent cylinder surrounding the lamp and interposed between the lamp and the reflective cut-out 25, 26. This cylinder has on it a relatively opaque design simulating clouds, snow fields or the like, and the cylinder is rotated by the wind vanes 42 so as to carry the shadows of the design from the front to the rear of the banner across the illuminated figures. In this way the appearance of movement is accentuated and the deer and sleigh appear to be traveling rapidly ahead through the clouds. The appearance of movement of parts of the figures formed by the reflective cut-outs may be attained as illustrated in Fig. 6 by providing double illumination with

lamps **50**, **51** of different colored lights and correspondingly selectively coloring parts of the illuminated figures. The deer **25'** of Fig. 6 may have two contrasting positions of its legs. Positions **52**, **52'** are colored red, for instance, and positions **53**, **53'** are colored green. The remainder of the reflective cut-out **25'** is responsive to both red and green, and the lights **50**, **51** are red and green, respectively, in color, and are alternately flashed on and off so that the legs of the deer will appear to move from position **52**, **52'** to position **53**, **53'**, and vice versa, to give the appearance of running movement.

I claim:

1. The combination with a towing device comprising an airplane or the like, of towing connections attached thereto, a display device carried in a vertical position by said connections at a distance from said towing device, said display device comprising an elongated strip of non-reflective material having a figured cut-out of reflective material flexibly mounted on said strip to face in the direction of travel of the towing airplane and waving with said flexible strip when the strip is towed, and means comprising a light source directing its rays at an angle to the plane of said display device to provide successive areas of light and dark for visibly illuminating said reflective material during the towing of the strip with variable lights progressing in a direction opposite to the direction of movement of the said device so that the illuminated reflective material will appear as a suspended traveling figure in the sky with variable shadows passing from end to end of the strip as it bends or waves as it is towed.

2. The combination with a towing device comprising an airplane or the like, of towing connections attached thereto, a display device carried in a vertical position by said connections at a distance from said towing device, said display device comprising an elongated strip of non-reflective material having a figure on it formed of reflective material, means for visibly illuminating said reflective material during the towing of the strip, and means cooperating with said illuminating means and acting to cast moving shadows across said material in a direction opposite to the direction of the display device so as to superpose on the movement of said device a further appearance of travel through the sky developed by the relative progress of the display device with relation to said shadows.

3. The combination with a towing device comprising an airplane or the like, of towing connections attached thereto, a display device carried in a vertical position by said connections at a distance from said towing device, said display device comprising an elongated strip of non-reflective material having a figured cut-out of reflective material facing in the direction of travel of the device, means for visibly illuminating said reflective material during the towing of the strip, and rotary means cooperating with said illuminating means and acting to cast moving shadows across said material in a direction opposite to the direction of the display device so as to superpose on the movement of said device a further appearance of travel through the sky developed by the relative progress of the display device with relation to said shadows, said rotary means comprising vanes interposed in the air currents so as to be driven in accordance with the relative velocity of said currents.

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