

A Flame Barrier, Apparatus and Method for Entertaining Guests

Background of the Invention

Field of the Invention

[0001] The subject matter described herein relates generally to barriers for thermal energy and products of combustion and to apparatus and methods employing such a barrier for entertaining guests.

Related Art

[0002] To provide high entertainment value for today's sophisticated customer, themed entertainment venues, such as theme parks and amusement parks, include a variety of entertainment that is expected to thrill a guest. In one example, the entertainment involves action associated with a ride itself such as the effect of gravitational forces on the body that arises during high speed twists, turns, ups and downs of a roller coaster. In another example, the entertainment involves the surprise and apprehension created during a perceived event. For example, the Mummy attraction at Universal Studios Florida provides, among other special effects, several fire effects that are passed by guests during a ride through the attraction. The guests are located ~~20 to 30 feet~~ 6.10 to 9.14 m (20 to 30 feet) from the flaming prop that is lit to provide the effect of radiating heat and a flash of light. At this distance, the sense of surprise and apprehension created by the effect is limited. Currently, when guests are directed close to an effect, within arms length, a simulated flame such as a flapping fabric, lighting effects, faux fire, fog and projection are typically used instead of a real flame.

arrangement may advantageously vary a flow pattern, represented by arrows 36, of a flame thereby reduce the build up and/or facilitate removal of soot.

[0027] Referring now to Figure 7, one embodiment of a liquid flow apparatus in accordance with the present invention for removing soot or preventing the buildup of soot on a barrier is shown generally at 38. The liquid flow apparatus 38 may comprise a container 40 that supports a volume of a liquid such as water and includes an output spout 42. The output spout 42 may be located on a flame directed side of the barrier 14 and configured to provide a generally laminar flow of liquid in the direction of arrow 44 via gravity. A collector 46 may collect the liquid and a pump 48 is provided for circulating the liquid through a filter 50 back to the container 40.

[0028] Referring again to Figure 1 and in one particular embodiment, the barrier 14 may be transparent in the human visual range (wavelengths of $0.4 - 0.7 \mu$ $0.4 \times 10^{-6} - 0.7 \times 10^{-6} \text{ m}$ ($0.4 - 0.7 \mu$)) while blocking other radiation wavelengths including IR radiation (about $1 - 12 \mu$ $1 \times 10^{-6} - 12 \times 10^{-6} \text{ m}$ ($1 - 12 \mu$)). This is accomplished, e.g., by coating the barrier 14 with a material comprising a low emissivity and that is spectrally selective or by the bulk properties of the selected material. It will be appreciated that the foregoing allows a much larger flame effect much closer to the guests as the IR radiation from the free carbon is largely reflected by the visually transparent surface.

[0029] In another particular embodiment, the barrier 14 may be partially transparent in the IR, e.g., through use of a known coating that provides an incomplete IR blocking to convey a partial sense of intense heat to a guest. Such a coating is sold under the trademark "SUNCOAT" by Milgard Windows, Inc of Tacoma, WA.

[0030] It will be appreciated that radiation from the heated barrier 14 itself may be incident on the guests, in order to counter act this, the barrier may be cooled between blasts to increase the likelihood of surprising a guest.

[0031] Referring also again to Figure 1 , in one particular embodiment and in order to best surprise the guest 8 and create a suitable amount of apprehension, it has been found that the distance d between the guest and the barrier 14 may be limited to approximately ~~3-feet~~ 0.9 m (3 feet). In operation and upon the guest 8 arriving at location L, the flame generating device 12 is energized and the flame 20 is created to surprise and entertain the guest.

[0032] Another embodiment of the present invention is shown generally at 100 in Figure 3. In Figure 3, like components to those described above are not repeated hereafter and are labeled similarly to that in Figure 2 excepting that each begins with one hundred. In this embodiment, rather than a single guest 8 (Figure 2) being entertained by a flame 120, a ride system 132 is illustrated wherein multiple guests 108 are carried in a vehicle 132 that follows a track 134. Also, in this embodiment, scenery 136 and 138 are both provided to increase the likelihood of surprising the guests 108.

[0033] A further embodiment of the present invention is shown in Figure 4, therein a method of entertaining at least one guest is shown generally at 200. In this embodiment and, as shown at 202, the method comprises directing at least one guest to a location; as shown at 204, orienting the at least one guest in a particular direction; as shown at 206, generating a flame that extends toward the location and in a direction that opposes the particular direction that the at least one guest is

Claims

1. A barrier configured to remain transparent after multiple blasts of a flame from a device for generating a flame wherein the flame is blasted proximal to the barrier, the barrier comprising:

a transparent sheet comprising at least one of glass and plastic; and

a coating located on the surface of the transparent sheet, the coating comprising a liquid resin that functions to provide a thermal barrier.

~~means for preventing soot from building up on the transparent sheet created by the multiple blasts of the flame.~~

2. The barrier of claim 1, wherein the transparent sheet comprises at least one of polycarbonate and borosilicate.

3. ~~The barrier of claim 1 or 2, further comprising a coating located on a surface of the transparent sheet, the coating comprising a liquid resin, wherein the liquid resin comprises a~~
suspended conductive material.

4. The barrier of claim 1, ~~2 or 3~~, wherein the transparent sheet further comprises an electrode mounted to a surface of the transparent sheet located proximal to the device for generating at least one flame, wherein the electrode is configured to conduct an electrical charge to the surface.

5. ~~The barrier of any one of the preceding claims~~ claim 1, wherein the barrier is stationary.

6. ~~The barrier of any one of the preceding claims~~ claim 1, wherein the barrier is disposed within 3 feet of a location to which at least one guest is directed.

7. ~~The barrier of any one of the preceding claims~~ claim 1, further configured to be transparent to wavelengths in the visual spectrum.

8. ~~The barrier of any one of the preceding claims~~ claim 1, further configured to be partially or completely transparent to wavelengths in the IR spectrum.

9. ~~The barrier of any one of the preceding claims~~ claim 1, ~~wherein the means for preventing soot from building up on the transparent sheet comprises~~ comprising at least one of a squeegee, a fluid curtain and a liquid flow.