could actually pass a hand through the holographic image **1508**. In another embodiment, the holographic image is projected onto a holographic film. A secondary display **1504** may display the second part of a unified image associated with a bonus game or it may display a basic game or a help/information screen.

[**0127**] B. Virtual/Stereoscopic 3D Displays

[**0128**] a. Autostereoscopic Display

[**0129**] Autostereoscopic displays present a true or perceived 3D image to a viewer without the need for glasses, goggles, or other potentially encumbering viewing aids. Autostereoscopic displays that present a true 3D image have been described above, such as volumetric 3D displays, multi-layer displays, and holographic displays. The following discussion focuses on autostereoscopic displays that present a so-called virtual 3D image which is actually a 2D image that is perceived by the viewer to be a 3D image. In this category, two types of autostereoscopic displays will be discussed: lenticular displays, which are a type of parallax display, and parallax illumination displays which use light lines to create a parallax effect.

[**0130**] **FIGS. 16***a* and **16***b* illustrate two types of lenticular displays. In **FIG. 16***a,* part of a lenticular display **1600***a* is shown having cylindrical lenslets **1602***a* which are optically aligned over an image layer **1604***a,* such as a liquid crystal layer, through which image data is emitted. Each lenslet **1602***a* focuses on the image data emitted through it and directs the light in different directions. The image data represents imagery destined for the right and left eyes which have been interleaved together. As the light representing the interleaved imagery is emitted through the lenslets **1602***a,* it is directed such that the imagery for the right eye reaches the right eye, and the imagery for the left eye reaches the left eye. The viewer's brain fuses the left and right imagery together to form an impression of depth. The image layer **1604***a* may also be a CRT or other 2D display.

[**0131**] Lenticular displays create a horizontal parallax effect only. Another type of lenticular display, also called an integram, uses spherical lenslets instead of cylindrical ones to present horizontally and vertically varying directional information, thus producing a full parallax image. Part of a lenticular display **1600***b* having spherical lenslets **1602***b* optically aligned over an image layer **1604***b* is shown in **FIG. 16***b.* The spherical shape of the lenslets **1602***b* permits the light emitted by the image layer **1604***b* to be directed in both horizontal and vertical directions. As with the cylindrical lenticular display, the image layer **1604***b* may be part of a liquid crystal display, a CRT, or any other 2D display.

[**0132**] Lenticular displays are available from numerous manufacturers, including for example Sharp, Philips, Sanyo, Samsung, Zeiss, SeeReal Technologies GmbH under the designation Dresden 3D Display (D4D), and StereoGraphics Corporation under the designation SynthaGram™, and have been developed by the University of Dresden and others. A lenticular display may be incorporated into any of the gaming machines described herein and may display either a basic wagering game or a bonus game. A lenticular display may also be used as the secondary display of any of the gaming machines described and in conjunction with any other POV or 3D display discussed herein.

[**0133**] In an embodiment, a gaming machine having a lenticular display tracks a characteristic associated with a player such as the player's position or angle relative to the display using one or more infrared or imaging devices such as a camera. The tracking operates in a similar manner described above in connection with the multi-layer displays. A lenticular display with tracking is available from SeeReal Technologies GmbH under the designation Dresden 3D Display (D4D) in either the CAD version (optical tracking) or the MED version (spot tracking). Note that the infrared or imaging device may be incorporated into the display or into the cabinet of the gaming machine. The tracking embodiments described herein may be used in connection with any of the displays and any of the gaming machines described herein.

[**0134**] The second type of autostereoscopic display in the virtual 3D display category is a parallax illumination display **1700**, a part of which is shown in **FIG. 17***a.* The parallax illumination display **1700** includes a transparent display layer **1702** disposed in front of an illumination plate **1704** containing columns of light lines which can be selectively turned on or off. When turned on, the light lines are observed by a viewer **1710** shown in **FIG. 17***b* through the columns of pixels on the transparent display layer **1702**. Left-eye and right-eye views of the same imagery are interleaved and displayed on the pixel columns and each eye observes the imagery from slightly different angles because of binocular disparity caused by the distance between two eyes. The slight angular displacement creates a perceived 3D effect. Note that the illumination plate **1704** can be turned off to display in 2D mode.

[**0135**] Parallax illumination displays are presently commercially available from Dimension Technologies, Inc. under the designations 2018XLQ and 1015XLS and work with any graphics card using the well-known nVidia chipset. A parallax illumination display may be incorporated into any of the gaming machines described herein and may display either a basic wagering game, a bonus game, or a scrolling indicia feature. Such a display may also be used as the secondary display of any of the gaming machines described and in conjunction with any other POV or 3D display discussed herein.

[**0136**] b. Non-Autostereoscopic

[**0137**] Another type of virtual 3D display is a non-autostereoscopic display which, in contrast to autostereoscopic displays, requires a viewing aid to complete the virtual 3D effect. Many autostereoscopic displays require the viewer to look at the display at a certain angle and within a certain distance in order to enjoy the desired virtual 3D effect, but no such restrictions are found with non-autostereoscopic displays. An example of a non-autostereoscopic display suitable for use with a gaming machine of the present invention is manufactured by Samsung under the designation 3D Hyper Monitor, which includes a glass pane placed between two LCD panels, each reflecting half the light and providing light permeability, creating a 3D effect when the viewer wears special film-coated glasses or goggles.

[**0138**] A non-autostereoscopic display may be incorporated into any of the gaming machines described herein and may display either a basic wagering game or a bonus game. Such a display may also be used as the secondary display of any of the gaming machines described and in conjunction with any other POV or 3D display discussed herein.

[**0139**] While the present invention has been described with reference to one or more particular embodiments, those