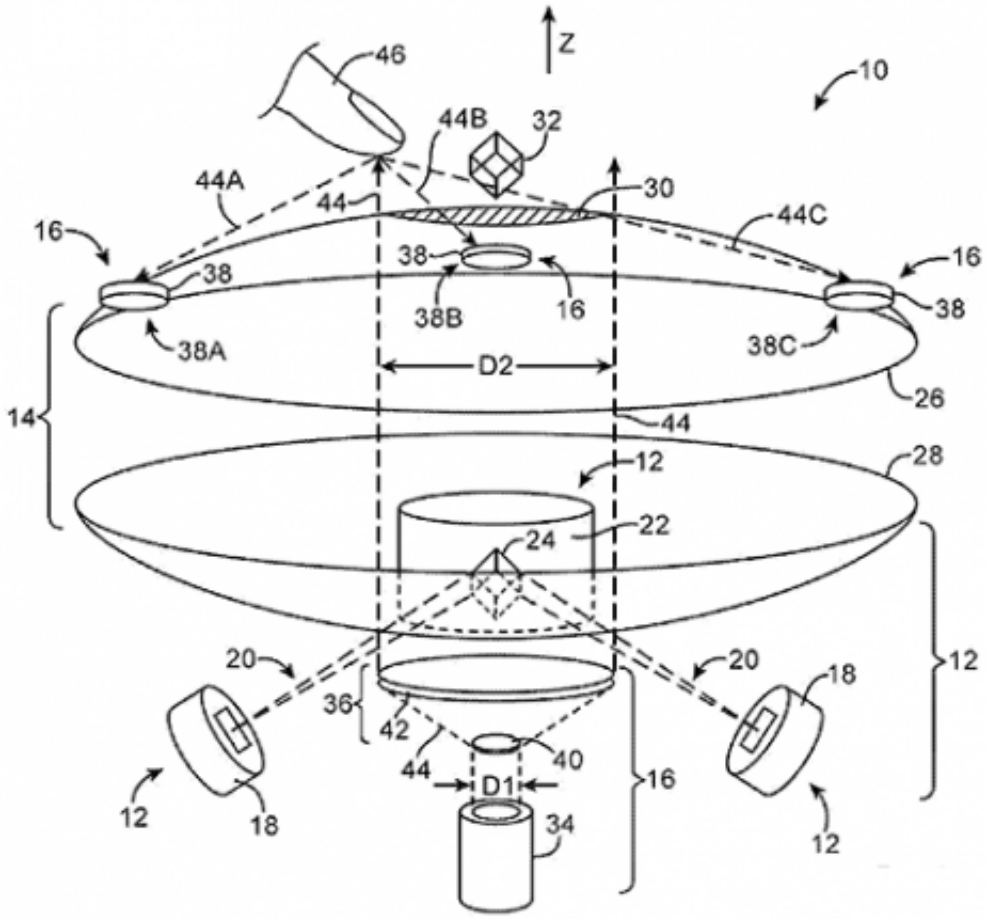
# Apple applies for patent on 'Interactive Three-Dimensional Display System'

April 25 2014, by Bob Yirka




Credit: USPTO

(Phys.org) —Apple Inc. has applied for a patent on an interactive hologram device. In its application, the maker of iPhones, iPads and

other devices, describes a new device that could project a holographic 3D image into a small space—the image projected could then be manipulated using human hands, responding to swipes, squeezing, etc.

Apple has not made any announcements regarding the interactive display system, but the patent filing makes clear that the company is serious about funding research into holographic display devices. The proposed device described in the application would use already existing technology in new ways. The listed inventors, Christoph Krah and Marduke Yousefpor propose a three part design: a 3D display system, an optical based system that translates 2D images to 3D, and sensors to read hand movements. All of the components would of course connect to a central control mechanism that together would create the illusion of a three dimensional object hovering over a base, that responds to human manipulation.

One item of note, the image that is projected is created digitally—it's not simply the reflection of a real object as has been done with other similar systems. It would be created using lasers sent into a medium such as a crystal so that it could be seen by the human eye. Non-linear imagery would be situated between two parabolic mirrors with the main image reflected off the upper mirror towards the lower mirror—the final images would eventually pass out through a hole. Lasers would also be used to follow hand movements, allowing for precise gesture control. All of the data would be controlled by a central system, which is not described in the application. The result would be what the Apple team describes as "hologram-like illusions."

The application has only recently come to light, though the submission date indicates it was originally filed in October of 2012. Whether Apple has been pursuing the project is unknown, though it appears likely as Microsoft, Amazon and other competitors have made clear their intentions to build a similar device. If all goes well, consumers might

wind up with such devices on smartphones or tablet computers in the not too distant future, making interactions with such devices far more immersive.

**More information:** Patent: Interactive Three-Dimensional Display System

**Abstract**
An interactive display system may be provided that allows a user to interact with three-dimensional projected images that have been formed in mid-air. Display structures may be used to display a primary image. The display structures may include structures for creating a three-dimensional image such as a laser projection system that creates a three-dimensional image in a non-linear crystal or a three-dimensional display based on a rotating two-dimensional display or other three-dimensional display equipment. An optical system based on parabolic mirrors or lenses may be used to project the three-dimensional image that has been formed on the display structures into mid-air. A user may interact with the projected image. Sensors may use trilateration techniques to monitor the user's interactions. The projected image may be updated based on the user's interactions, thereby allowing the user to control and manipulate the projected image in mid-air.

via Appleinsider

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