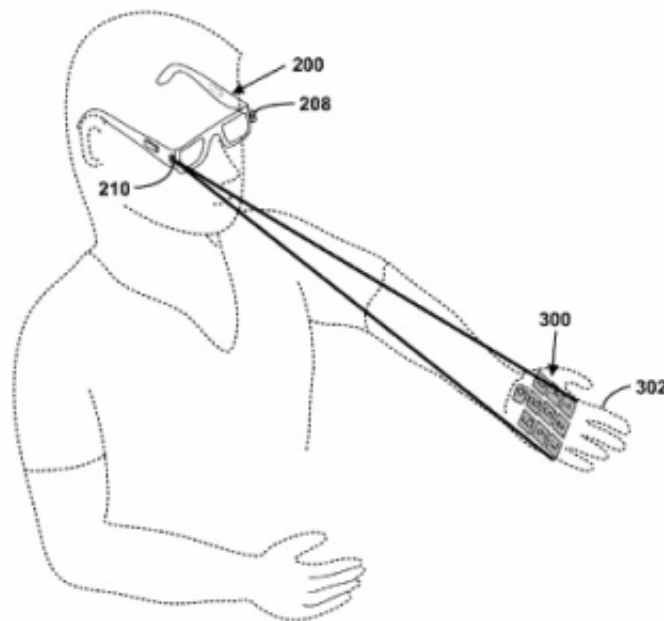# Google Glass may run with laser-projected keyboard

January 18 2013, by Nancy Owano

FIG. 3A

(Phys.org)—Just when you thought you could swing into 2013 without another report on Google Glass in-the-wings, this is the week your luck runs out. Ideas continue to fly regarding what could possibly be the ideal way to manage control of Google Glass, in order for the user to communicate with the device. How? With what? If touchscreens and mousepads are out of this wearable-computing picture, one

uncomfortable alternative would be having to keep reaching up to the glasses themselves to maneuver around.

Google engineers are capable of thinking their way through the device input issue, however, and expectations are they will carefully focus on controls for wearable computing that promise ease of use as well as effectiveness. As of this week, for example, there is evidence that Google is thinking along the lines of laser-projected keyboards for device control. Their patent description suggests a laser-projected control pad.

The patent, "Methods and Systems for a Virtual Input Device," was made public on Thursday but was filed with the U.S. Patent and Trademark Office in June last year. The patent said that "In one example, the virtual input device includes a projector and a camera. The projector projects a pattern onto a surface. The camera captures images that can be interpreted by a processor to determine actions. The projector may be mounted on an arm of a pair of eyeglasses and the camera may be mounted on an opposite arm of the eyeglasses. A pattern for a virtual input device can be projected onto a 'display hand' of a user, and the camera may be able to detect when the user uses an opposite hand to select items of the virtual input device."
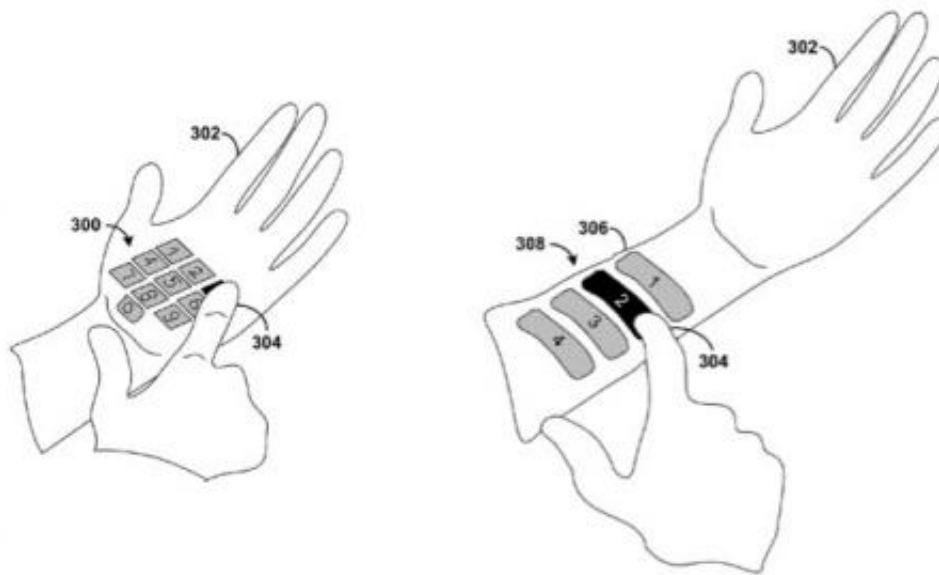
FIG. 4

FIG. 5

The interesting part is that the Google patent could bring to Project Glass a laser-projected keypad sitting on the user's hand. The keyboard would not be limited to a specific surface, however, since it is only a projection. The wearer could have it on the arm or the wrist.

The tiny laser projector sits in the arm of the glasses to beam out the keypad buttons, and a built-in camera and processor would interpret finger movements in the region of those buttons. The patent says that the virtual keyboard "can be projected onto a surface and components of the keyboard detect finger movements and translate the movements into keystrokes on a device. A projection keyboard unit generally includes a laser to project a visible virtual keyboard onto a surface (e.g., a red diode laser as a light source to project a full size QWERTY layout keyboard, with a size of 295 mm.times.95 mm projected at a distance of 60 mm

from the projection [keyboard](#) unit), and a sensor or camera to sense finger movements. A location or detected co-ordinates of the finger can be used to determine actions or characters to be generated. "
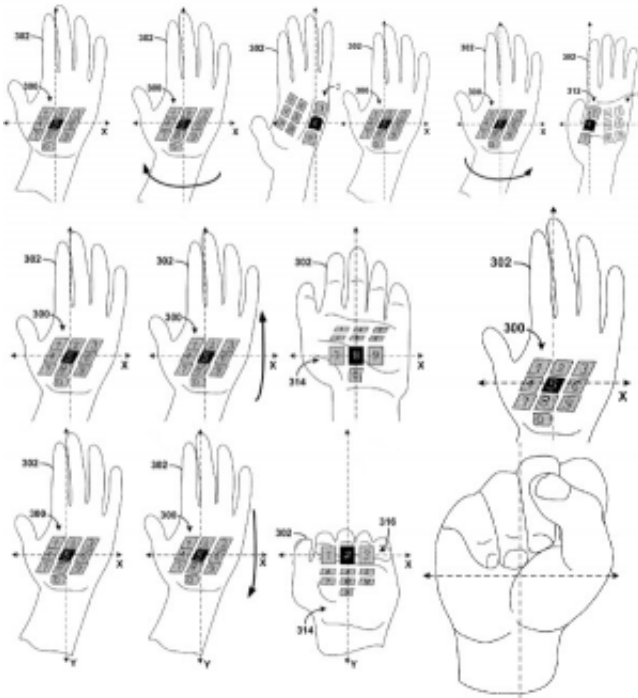
Google Project Glass is the research and development program that holds forth the promise of an augmented-reality head-mounted display that will be fun to wear, useful and easy to use. Project Glass is under the umbrella of the Google X Lab, which hatches technologies for the future such as the much-publicized self-driving cars, and now the A-R glasses. Last year, Sergey Brin modeled the glasses; a consumer edition is expected to appear next year.

This patent could be just the thing that materializes as a feature that

comes out in Google Glass in 2014, or not. Project Glass continues to hatch. "We constantly try out new ideas of how this platform can be used," Babak Parviz, head of the Google Glass [project](#), said in an interview with *IEEE Spectrum* just this month. "There's a lot of experimentation going on at all times in Google. We haven't actually talked about specific features. We have mentioned some basic capabilities, like taking a picture and sharing it. We are experimenting with a lot of things. The feature set for the device is not set yet. It is still in flux."

More information: [Patent](#)