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## LAPTOP WITH PALM REST TOUCH SENSE PROJECTOR FOR NOTE TAKING

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## **Laptop with Palm Rest Touch Sense Projector for Note Taking**

### ***Abstract***

A laptop design with an integrated projector at palm rest area is proposed. The projector will be hidden inside the laptop chassis, a mirror can be triggered to pop up and reflect the content from projector to the laptop palm rest area or desk surface. Coupled with a camera, and using image recognizing capabilities of the computer, the palm rest or desk surface will work like a touch screen, user will be able to write on the palm rest for quick note taking.

Aside from note taking, the projector can also work as a second screen of the laptop, showing information and notifications while the main screen is occupied with other contents.

The mirror will be retrieved by pushing on it when projector is not used, the back side will be flush with palm rest when the mirror is retrieved to create a clean and neat design.

### ***Problem solved***

This innovation is to solve the needs to take quick notes on a laptop, as well as to add a second display without the need of a second display panel.

Also by hiding the projector inside the chassis with a retrievable mirror, it solves the problem of projector blocking the panel lid from closing.

### ***Description***

In this patent disclosure we put a pico projector (miniature projector) inside the laptop chassis underneath the palm rest area. A mirror that can be popped up will reflect the image from the projector to the palm rest of the laptop or desk surface and create a small display area in palm rest or desk surface. A camera will be sitting next to the projector to record the pen traces (user taking notes) in the projected area, then converted to digital image and projected back to the image area. So when user is writing with a stylus, what he writes will be immediately projected back to make it similar to write on a paper.

The mirror will be spring loaded with a locking mechanism, when it is pushed it will pop up, and push it again to restore it. Once the mirror is pushed back, it will be lower than or flush with the C deck surface to avoid interferences with panel when the lid is closed.

Multiple mirrors and lens may be used to create desired projection area within limited internal spaces.

The mirror in some cases can also be placed in the keyboard area to make it look like a key when retrieved, make the design more integrated and non-intruding.

A software application will work with the camera and projector to convert the notes recorded by the camera to digital contents.

A mechanical manual keystone adjustment by moving/tilting mirror or lens can be integrated; such keystone adjustment can also be done with software/firmware applications.

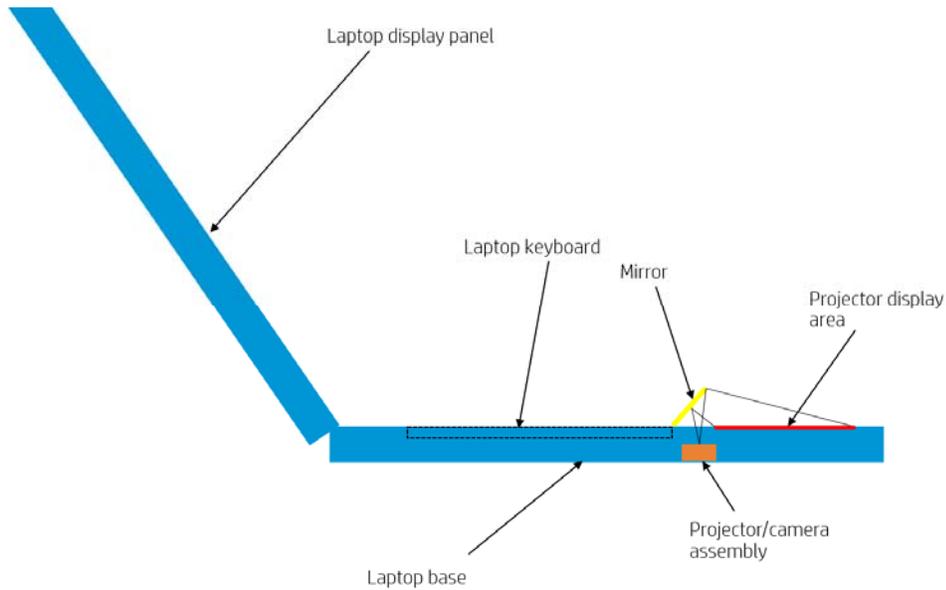


Fig 1. Illustration of the design with projector inside the laptop chassis

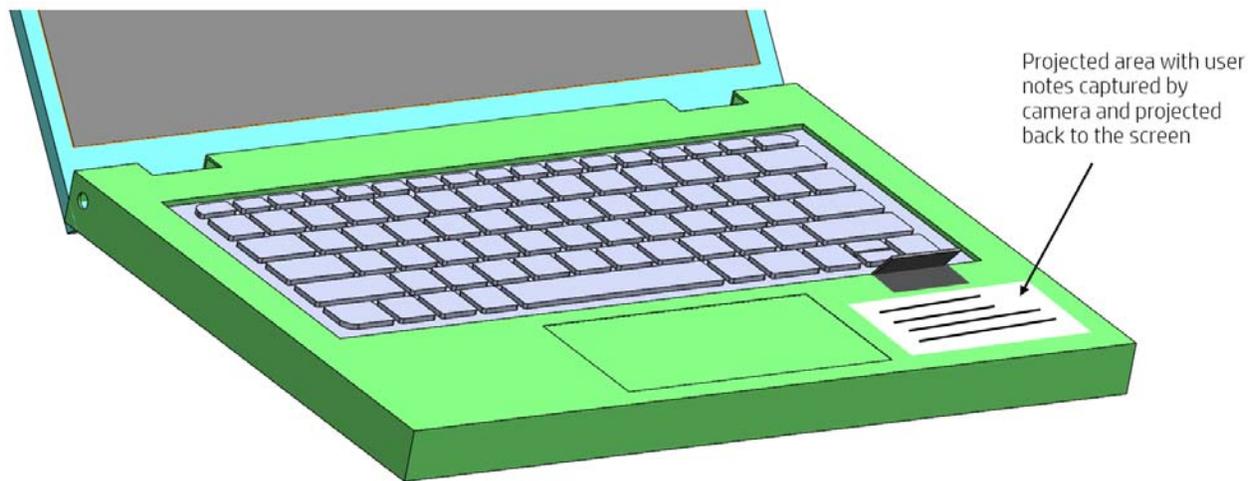


Fig 2. Content is projected to palm rest

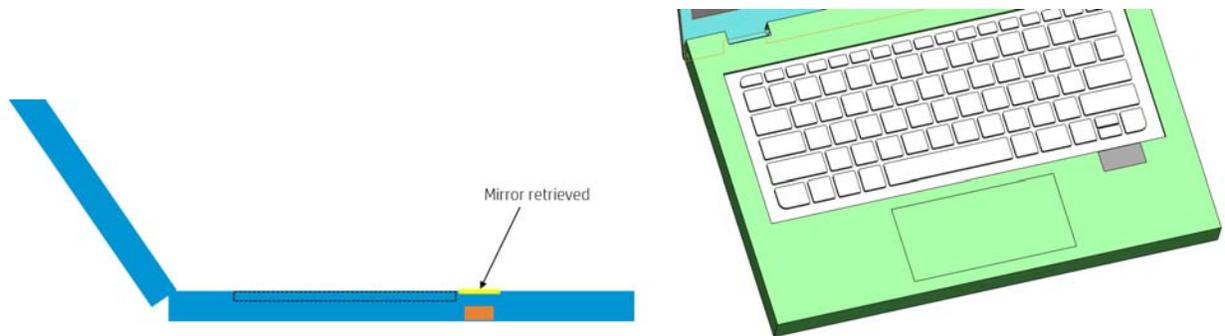


Fig 3. Mirror is retrieved

### ***Advantages***

This new design will have following advantages:

1. Enable the user to take quick notes when using the laptop
2. Pop up/pop down projector design make it take much less space compare to other solutions.
3. Couple with a camera for capturing notes.
4. Can be used as a second display for notifications, etc.

***Disclosed by Xiang Ma, Richard S Lin, Baosheng Zhang and Fangyong Dai, HP Inc.***