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SPACE SAVING KICKSTAND DESIGN FOR INKING MODE ON A CONVERTIBLE NOTEBOOK

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Space saving kickstand design for inking mode on a convertible notebook

This disclosure relates to the PC industry and focuses ultra-portable notebook designs. The use of Active stylus pens is becoming more standard for tablets and convertible notebooks. This invention makes using an active pen on a 360 more useful for a better user experience. Studies show that users like to write with their screen at an angle. This is achieved on surface pro like tablets with a kickstand. On a 360 notebook the user only has one choice for writing, it must be flat. At any other angle, when the user will try to write on the screen the unit will tip over or the hinge will close because it cannot support the weight of the user's hand. Traditional hinge and kickstand designs are too bulky to put behind the display. This disclosure is for a new hinge and kickstand design that can help minimize the impact to the size and design of the notebook.

As our products keep getting thinner and thinner we must find new ways to slim down the components we put inside. The engineer also needs to consider the Industrial design and not make too much of an impact to the exterior cosmetics of the device. Adding a kickstand to a convertible notebook can be easy by putting in the base of the notebook. The kickstand then connects to the back of the display so that it can be propped up for inking mode (See Fig. 1.). The problem with this design is that the display cover needs a feature to hold the kickstand in place. This will look ugly to the customer. Industrial Designers prefer a clean smooth surface. By moving the kickstand to behind the display we can reduce the amount of parting lines. This way, in inking mode, we can connect the kickstand to the rubber feet on the bottom cover. There is no need for extra ridges (See Fig. 2.). The challenge for putting the kickstand behind the display is the lack of space. In order to keep the product very thin, the gap behind the display is small and a traditional hinge will interfere with the display (See Fig. 3.).

This invention minimizes the space needed to put the kickstand behind the display. It is a fully custom solution that is integrated into the notebook. On the base we adhere magnets underneath the rubber feet on the D cover. The kickstand is assembled to the Back of the display. The kickstand is a ferromagnetic material so that it can be attracted to the magnets on base. The kickstand is secured to the A cover with an elastic sheet (See Figs. 4 and 5). The sheet can either be some sort of fabric, Mylar sheet, or thin rubber sheet. There is also a small magnet behind the display to keep the kickstand secured when it is not extended. To use the kickstand the unit is flipped into 360 mode. Then, when the display and base are pulled apart the large base magnet pulls the kickstand until it goes over the rubber foot. Then it can be locked in this position, so the display will not fall down. When the display is pulled farther and out of the magnet range the elastic fabric will pull back the kickstand into its original position.

With this design we can achieve this new feature without impacting the Industrial design or the thickness of the product. This is a valuable feature that will differentiate a premium product and make for a better experience with the active pen.

Abstract:

The use of Active stylus pens is becoming more standard for tablets and convertible notebooks. This invention makes using an active pen on a 360 more useful for a better user experience. Studies show that users like to write with their screen at an angle. This is achieved on surface pro like tablets with a kickstand. On a 360 notebook the user only has one choice for writing, it must be flat. At any other angle, when the user will try to write on the screen the unit will tip over or the hinge will close because it cannot support the weight of the user's hand. Traditional hinge designs are too bulky to put behind the display. This disclosure is for a new hinge and kickstand design that can help minimize the impact to the size and design of the notebook.

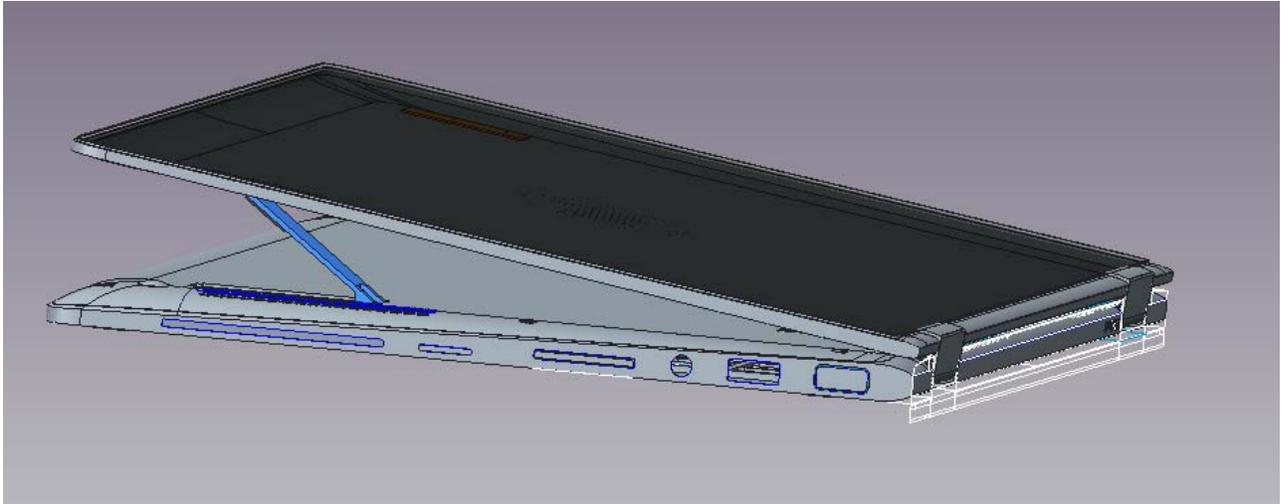


Fig. 1. This figure illustrates how a kickstand can be utilized to create an inking mode on a convertible laptop.

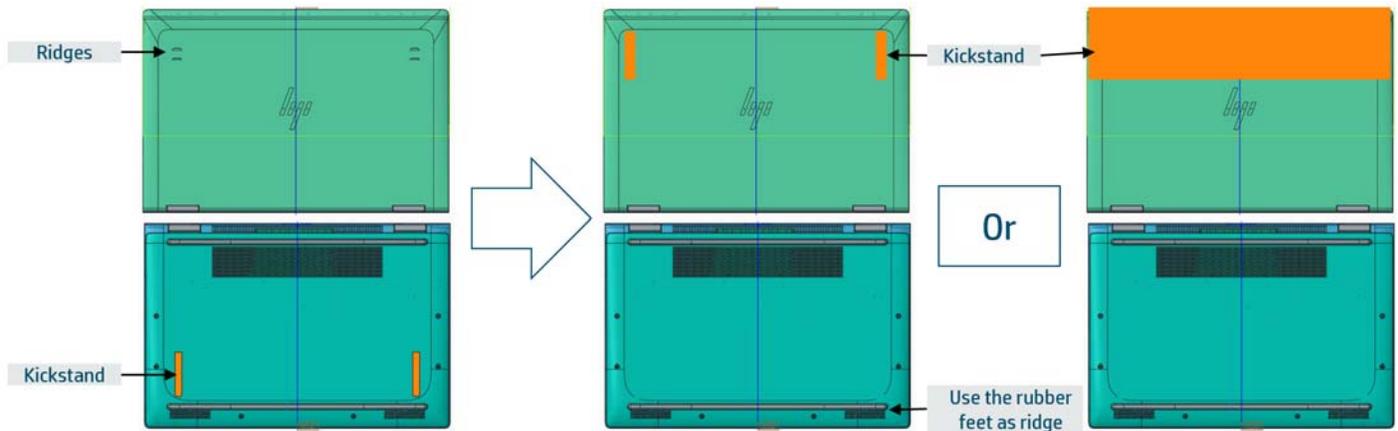


Fig. 2. This figure illustrates how the design can benefit ID by using the space saving design behind the display

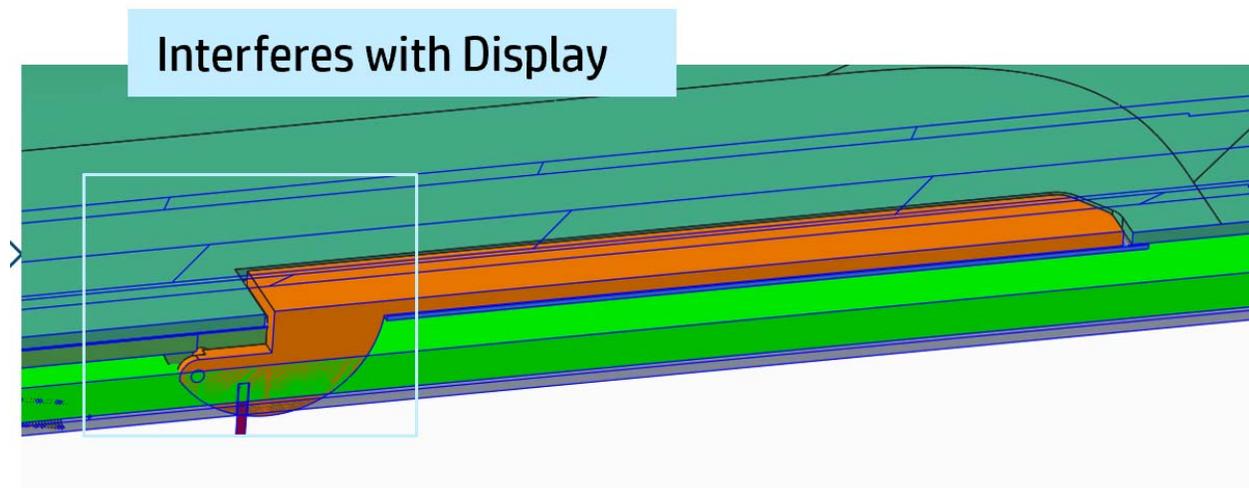


Fig. 3. This figure shows how a traditional hinge is bulky and will not fit behind the display.

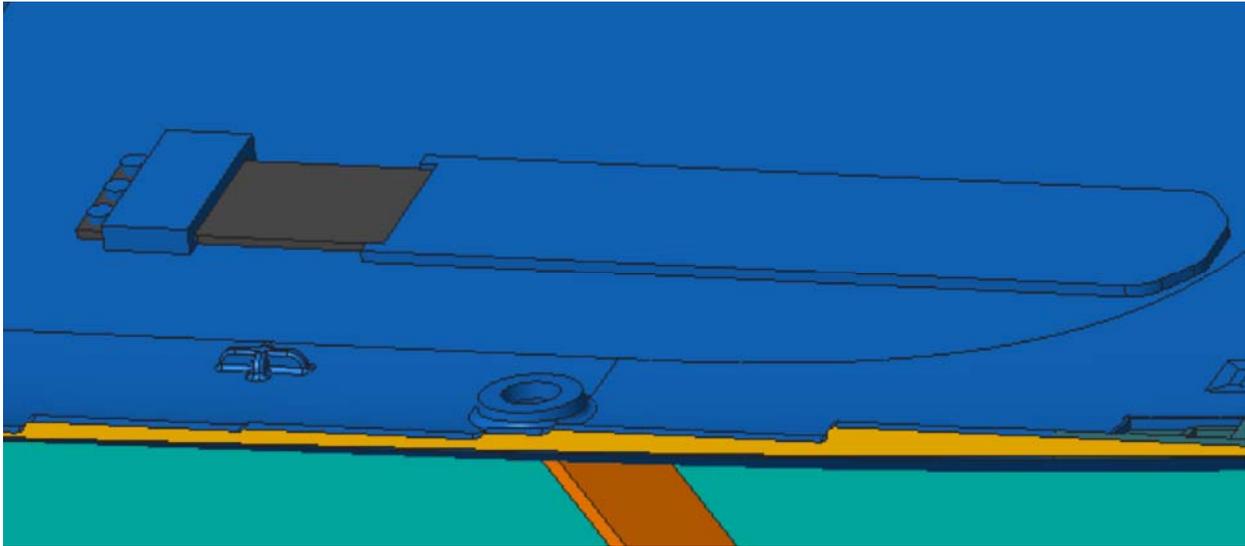


Fig. 4. This figure shows the inside of the device and how thin the design can be.

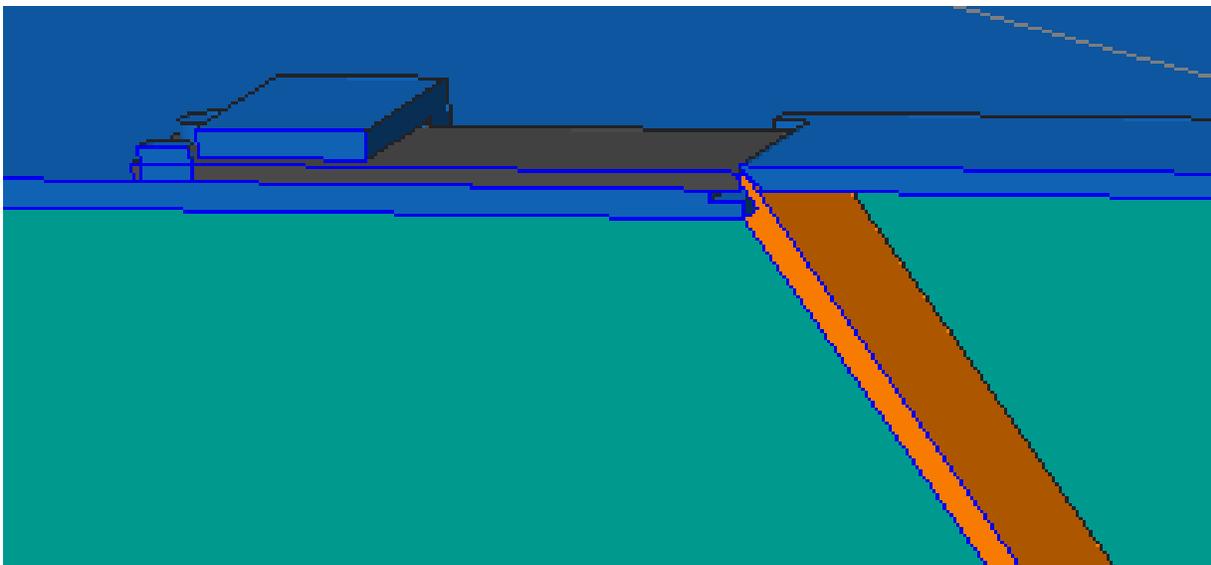


Fig. 5. This figure shows the cross section of the kickstand and how it is connected to the fabric or Mylar by glue bonding, sewing, or another attachment method.

Disclosed by Derek Kanas and Chan Park, HP Inc.