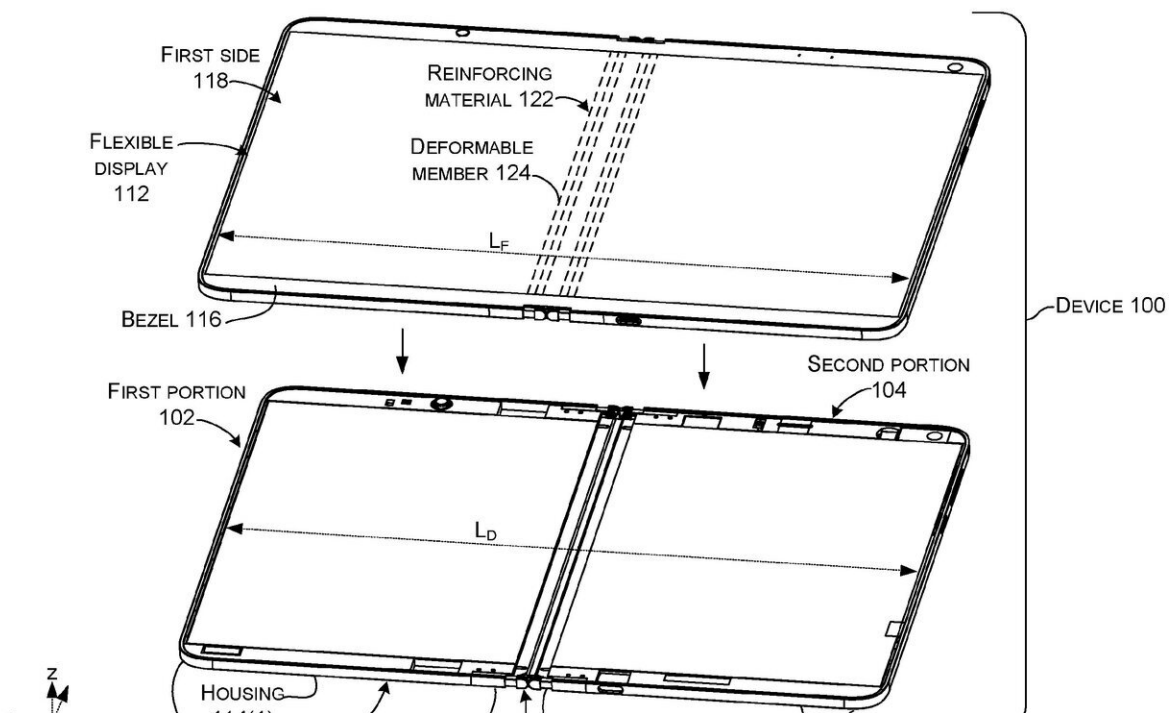


Foldables: An open-shut case of hinge worthiness is explored

September 16 2019, by Nancy Cohen



Credit: PCT/US2019/020179

Liquid powered hinges? Can they make a foldable fold better? A device able to stand up to repeated actions better? Interest in questions like that were inspired by patent buzz recently when a patent filing was discovered that centers around Microsoft and a foldable with the spotlight on its hinges.

The hinges would work on a flexible, foldable [display](#) by using liquid. The [patent application](#) for this idea was [spotted](#) by *WindowsUnited*.

One look at the patent discussion and you can appreciate the honesty of Ryan Maskell in *WinBuzzer*: "Needless to say, this is a fairly complex piece of engineering and we don't fully understand the [details](#)." As Maskell put it, it "dives into how the hinge would work mechanically, describing its use of a reinforcing material, corrugated pattern, gears, cords, and bridge structures."

Tom Warren, *The Verge*, was able to translate the patent's concept intentions into plain English. "The liquid can be filled inside [cavities](#) around the [flexible display](#) to help it bend and move into different positions. Microsoft's example shows a [device](#) with two separate sides and a flexible OLED display that extends across the entire device."

Aaron Mamiit in [Digital Trends](#) also read through the patent and said that it addresses a foldable OLED display that comes with a hinge "filled with liquid or gas."

Omar Sohail in *Wccfttech* looked closely at the wording for the liquid hinges. He wrote that "the hinge is an important [part](#) of any foldable device. That seems to be the reason why Microsoft has detailed the hinge structure in its foldable Surface patent. The company has mentioned a reinforcing material that can be placed between the [flexible screen](#) and the hinge assembly to provide support for a range of orientations."

Getting back to the question, then, on what difference would liquid make on a hinged device? "The cavities around the foldable display are filled with liquid to help it bend into various positions," wrote Mamiit, "while also reducing the stress on the screens." Another way that the liquid makes a positive difference: "This will also prevent debris from entering the hinge, to keep wear and tear to a minimum," he said.

The World Intellectual Property Organization (WIPO) carried a filing date of March 1 and publication date of September 12, and the patent is called "Hinged Device."

Warren pointed out that "Microsoft has long been focused on complex and impressive hinge work with its Surface devices." Actually, in June, there were reports from [Windows Latest](#) and *Patently Apple* that Microsoft was speaking patent talk over the one and the same hinge issue for flexible, foldable devices.

Patently Apple at the time reported that the US Patent & Trademark Office had "published a patent application from Microsoft that relates to a flexible hinge system designed for folding a large single flexible display very much like Samsung's Galaxy Fold."

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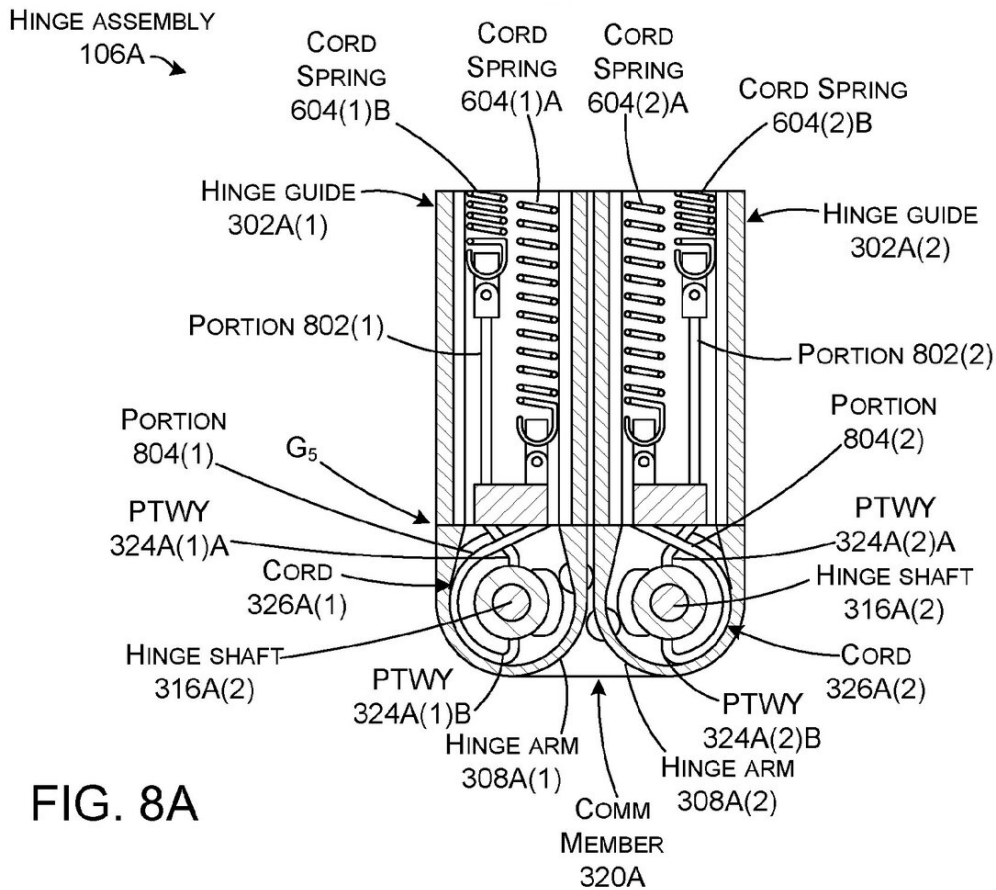


FIG. 8A

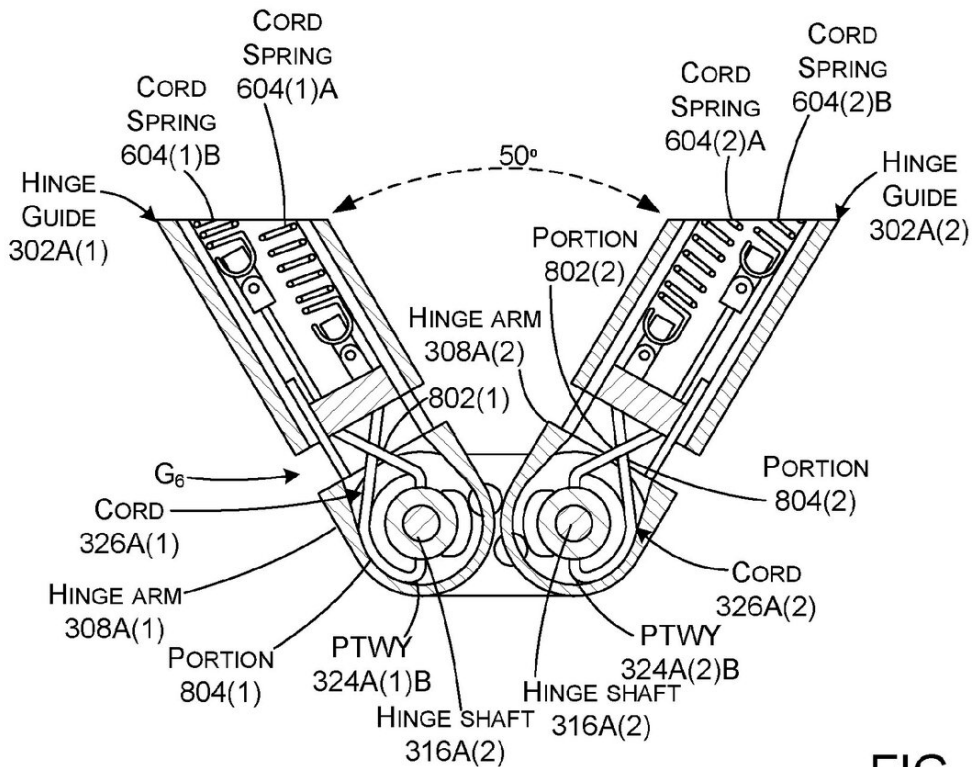


FIG. 8B

Credit: PCT/US2019/020179

The inventor had come up with a configuration to avoid "relative movement between the device portions and the flexible display that could cause reliability problems, such as short circuits in circuitry connected to the flexible [display](#)."

With the most recent patent news, what particularly drew Tom Warren's attention about the filing was wording that it was filed by "Microsoft technology licensing." The WIPO document showed "Applicants:" line completed as Microsoft Technology Licensing LLC.

What could that mean? Warren said it "could indicate the company will license this [technology](#) to other partners and PC makers."

And, if so, it would not come as any surprise to Rich Woods in *Neowin*: "That's really no surprise, since Surface [devices](#) have long served as inspiration for third-party PCs."

That being said, it would be too neat an assumption to expect the liquid/hinge idea to show up exclusively on Surface and it might be presumptuous, seeing the way it was filed with the technology licensing wording, that the hinge idea will be talked about at next month's Microsoft Surface event on October 2.

The event possibly could be the venue for the company's unveiling of a foldable Windows 10 powered device with [two](#) screens, said Alan Friedmen in *PhoneArena*.

But Mehedi Hassan in *Thurrott* reminded readers that "Although Microsoft's foldable Surface device, codenamed Centaurus, has been in the [works](#) for a while, no one really knows when Microsoft will actually launch this new device. As far as Hassan could see, the October 2 date for a big foldable Surface reveal was just the product of current rumors.

Furthermore, one could not place any bets there would be hinge-and-liquid talk. "Even if it eventually finds its way into a product, it will most likely not be part of Microsoft's upcoming event on October 2," said Mamiit. There is also no certainty that the patent idea is exclusively focused on Surface devices, considering the technology licensing wording.

Mamiit in *Digital Trends*: "The hinge, however, might not be in development for a specific device, and possibly not even for a Microsoft product. This is because the [patent](#) was filed by the company's technology licensing team, suggesting that other hardware makers may use the hinge in their own foldable devices in the future."

And if those question marks needed even more company, there is Maskell's on what one cannot assume about the all important hinge: "Previous hinge mechanisms have included a 360 magnetic design, floating connection, and phone format. If a device does make it to market, which is far from guaranteed, it could utilize any of these designs, or none of them."

More information: International Application No.: PCT/US2019/020179, patentscope.wipo.int/search/en/.../173118&tab=PCTBIBLIO

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