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September 2021

FLUIDS BAG SUPPORT FOR ROLLABLE DEVICE

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Recommended Citation

INC, HP, "FLUIDS BAG SUPPORT FOR ROLLABLE DEVICE", Technical Disclosure Commons, (September 17, 2021)

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Fluids bag support for rollable device

Abstract

Currently, the industry tends to add a thin SUS sheet in the backside of the rollable display. The thin SUS can provide some level of supporting and can still be roller. However, SUS is heavy. And trace mark still exists.

The proposal is to replace the SUS sheet with an air bag and provide good support for display. When user open display, screw plat device will extrusion the fluids bag and fluid will flow to end direction. When all fluid bag full of fluid then can provide panel support strength. When user close display, screw plat device will release the fluids bag and fluid will flow back to middle because the stress of bag in the end is higher than middle.

Background

The problems/challenges of rollable display is made by plastic films, polyimide for example as fig.1 shows. so is very soft and lack of supporting. And after rolling, there is trace mark or warpage in the rolling area due to the plastic materials are deformed.



Figure 1. Drawing of rollable display design

Invention Description

In this invention, we replace the SUS sheet with an air bag and provide good support for display.

When user open display, screw plat device will extrusion the fluids bag and fluid will flow to end direction. When all fluid bag full of fluid then can provide panel support strength.

When user close display, screw plat device will release the fluids bag and fluid will flow back to middle because the stress of bag in the end is higher than middle.

The fluids bag no limit air or liquid. The cover of the air bag can be PP, PI, PET, PE, or rubber, TPU, etc.

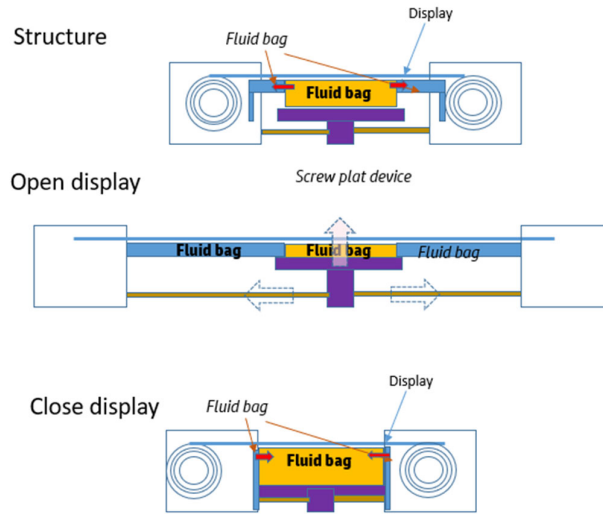


Figure 2. Drawing of patent proposal

Advantages

- Create fluids bag in hinge up to provide display support structure.
- The fluids bag deforms to match display close and open mode.
- Works for rollable display technology like OLED, E-paper, etc.
- Fluid bag can be very light weight.
- Fluid bag helps to relax the trace marks.
- The fluids bag provides the supporting to the soft plastic display panels

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