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Adhesive System With Superior Drop And Creep Performance

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Adhesive System With Superior Drop And Creep Performance

ABSTRACT

This disclosure describes an adhesive system that imparts superior drop and creep performance properties to display screens used in devices. The adhesive system is suitable for devices in which the display screen are not horizontal (parallel to the ground), e.g., smart displays. The adhesive system combines an adhesive that has high drop performance with an adhesive that has superior creep resistance. The adhesive system includes portions of an adhesive liner that utilize the adhesive with high creep resistance and portions of the adhesive liner that utilize the adhesive with good drop performance to bond the display screen to the device.

KEYWORDS

- Creep resistance
- Display creep
- Release liner
- Pressure sensitive adhesive (PSA)
- Smart display
- Smart speaker

BACKGROUND

Computing devices in which the display screens are positioned at a non-horizontal angle for substantial periods of time, e.g., smart displays, digital photo frames, etc. can suffer display creep wherein the display can slide or droop downwards due to gravity. Display creep can lead to cosmetic and functional problems in such devices.

The use of liquid glue can impart creep resistance; however, the lack of re-workability of liquid glue makes it unsuitable for use in devices where the display needs to be removed and reattached. The use of pressure sensitive adhesives (PSAs) can provide creep resistance; however, this comes at the cost of poor drop (impact) performance due to adhesive failure that causes separation of the display. Consequently, PSAs are not suitable for use in devices that are prone to being accidentally dropped.

DESCRIPTION

This disclosure describes an adhesive system that imparts superior drop and creep performance properties to computing devices. Per techniques of this disclosure, an adhesive system is utilized that combines an adhesive that imparts high drop performance with an adhesive that imparts superior creep resistance.

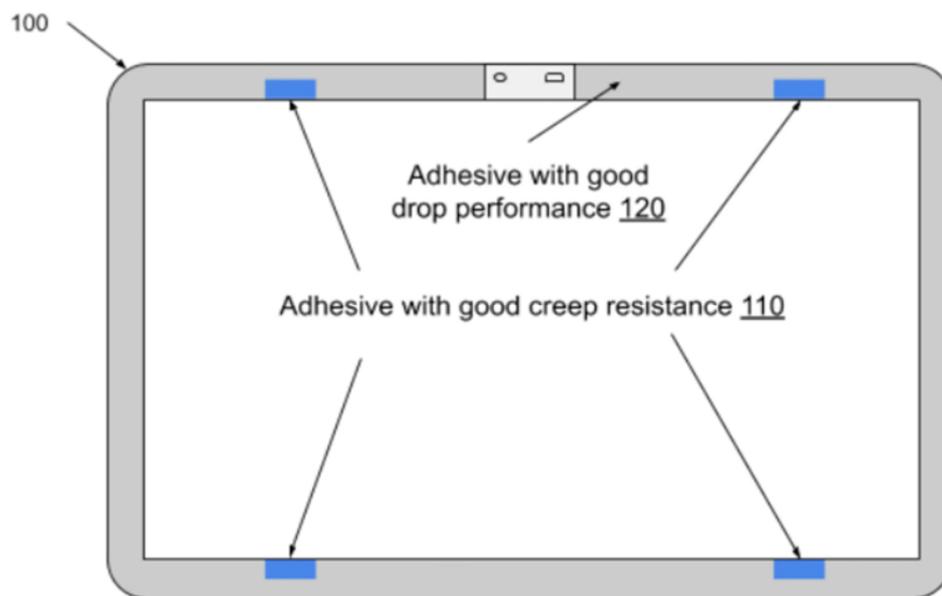


Fig. 1: Combination adhesive system for non-horizontal screen

Fig. 1 illustrates an example device that utilizes an adhesive system as described herein. A display of the device (100) is attached using a combination of an adhesive with superior

creep resistance properties with an adhesive with superior drop performance properties. In this illustrative example, some portions of an adhesive liner (110) utilize an adhesive with high creep resistance (e.g. PSA) while other portions (120) of the adhesive liner utilize an adhesive with good drop performance.

Both adhesives utilize the same release liner thereby mitigating any impact to the assembly process when compared to using just a single type of adhesive.

CONCLUSION

This disclosure describes an adhesive system that imparts superior drop and creep performance properties to display screens used in devices. The adhesive system is suitable for devices in which the display screen are not horizontal (parallel to the ground), e.g., smart displays. The adhesive system combines an adhesive that has high drop performance with an adhesive that has superior creep resistance. The adhesive system includes portions of an adhesive liner that utilize the adhesive with high creep resistance and portions of the adhesive liner that utilize the adhesive with good drop performance to bond the display screen to the device.