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June 05, 2019

## Phone display repair

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### Recommended Citation

Huang, Ives, "Phone display repair", Technical Disclosure Commons, (June 05, 2019)  
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## **Phone display repair**

### **ABSTRACT**

The display of a phone or other device is often one of the more expensive parts of the device. The removal of a display for repair or to access parts below it is typically a risky and breakage-prone process. This disclosure describes techniques that embed a thin, heat-sensitive wire between the display and the adhesive that adheres the display to the body of the device. When the display is to be removed, the ends of the wire are pulled out and the wire can be heated, e.g., by connecting its ends to a battery. The heat loosens the adhesive, and the display can be removed with ease. When the repair is done, the now-cooled wire is re-embedded below the display, the adhesive is reapplied, and the display is fastened to the body of the device. The described techniques enable easy and non-destructive disassembly and repair of devices.

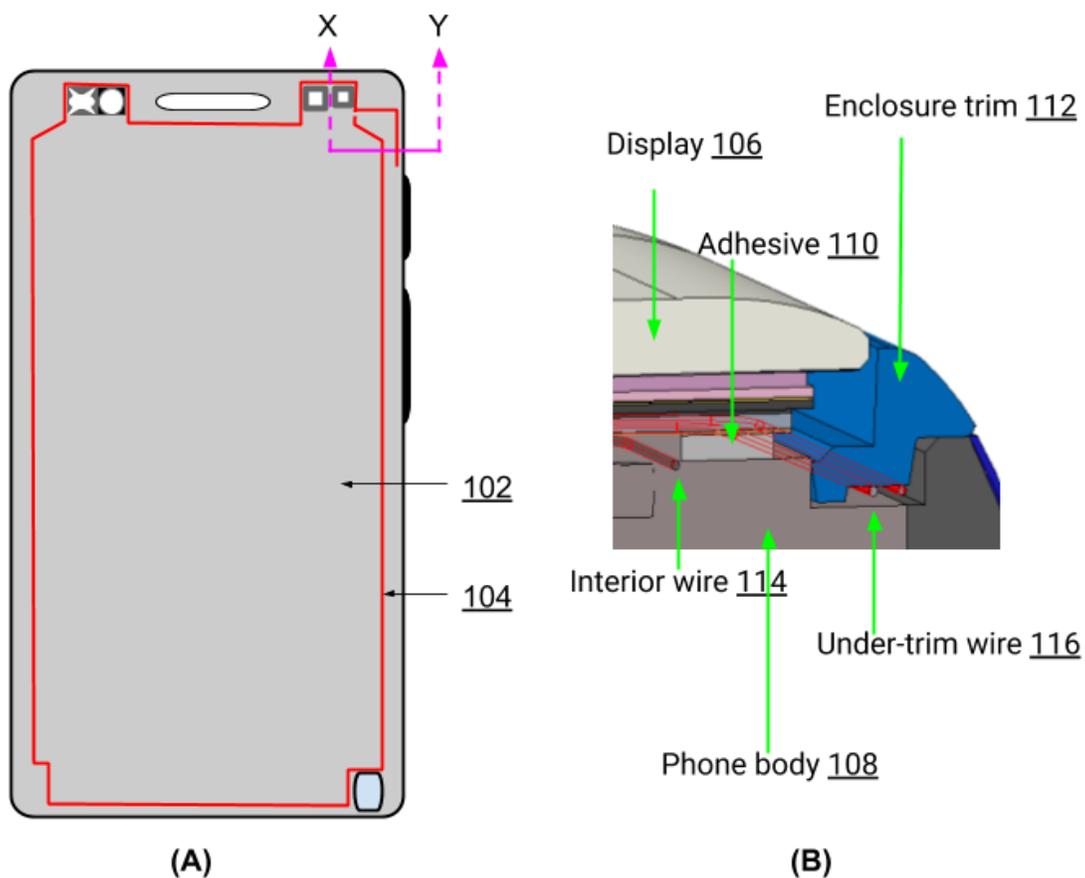
### **KEYWORDS**

- Display repair
- Screen removal
- Display removal
- Screen replacement
- Smartphone repair
- Heat-cutting wire
- Liquid crystal display (LCD)
- LCD module (LCM)
- Pressure-sensitive adhesive (PSA)
- Waterproof adhesive

## BACKGROUND

The display of a phone or other device is often one of the more expensive parts of the device. It is typically tightly fastened to the body of the device by a waterproof, pressure-sensitive adhesive. The removal of a display for repair or to access parts below it is typically a risky and breakage-prone process.

## DESCRIPTION

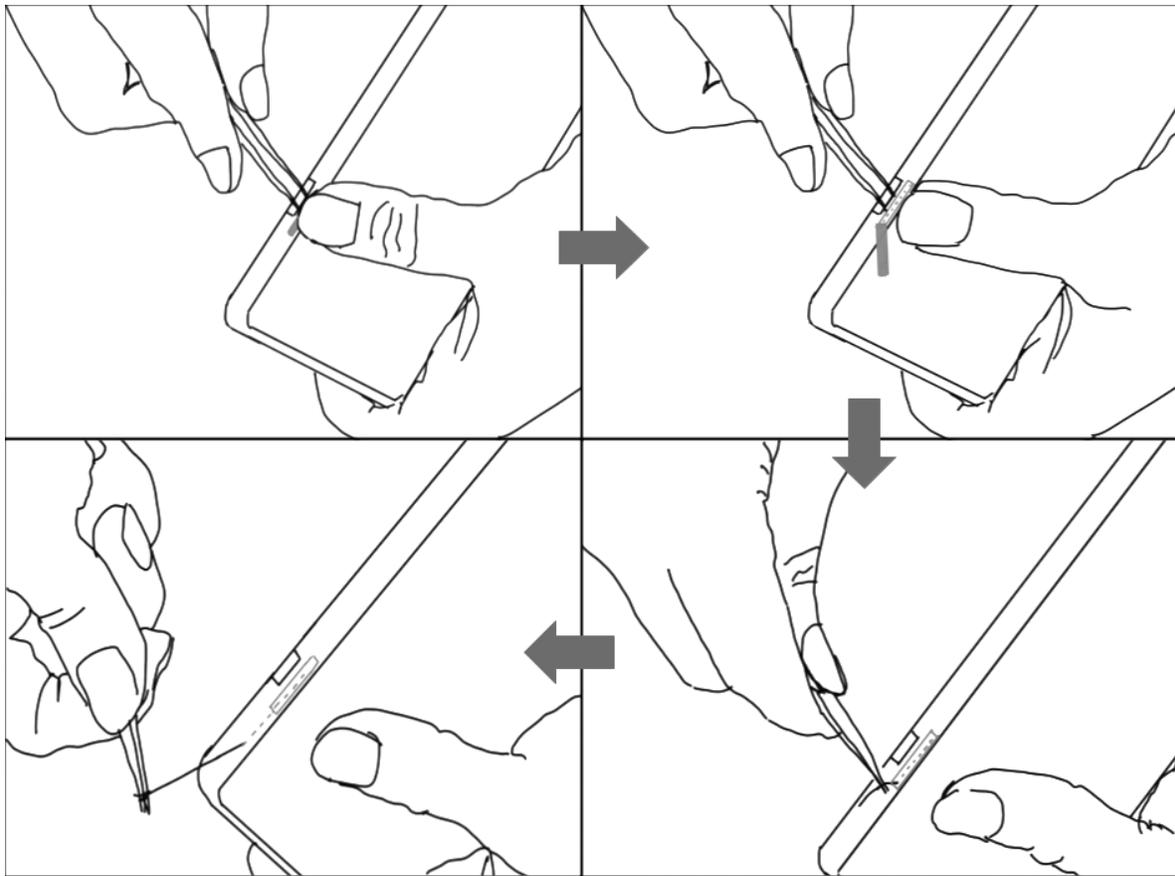


**Fig. 1: Phone display removal using an embedded, heat-sensitive wire: (A) Top sectional view; (B) View along section XY**

Fig. 1 illustrates the removal of a display of a phone or other device using an embedded, heat-sensitive wire. Fig. 1A illustrates a top sectional view of a phone (102). Per the techniques of this disclosure, a heat-sensitive wire (104) that closely follows the perimeter of the back of the

cover glass is embedded between the display and the adhesive that fastens it to the phone body. The heat-sensitive wire can be made of, e.g., a nickel-chromium alloy, and have a diameter of, e.g., 0.1 mm.

Fig. 1B illustrates a close-up view of section XY of Fig. 1A. The display (106) is affixed to the phone body (108) with a strong adhesive (110). An enclosure trim (112) covers the slit opening, if any, between the display and the phone body. One end of the wire is pulled towards the interior of the display (114), and the other is hidden beneath the trim (116).



**Fig. 2: Removing an end of the wire (clockwise)**

When the phone display is to be removed, the two ends of the wire, which are invisibly embedded beneath the display and enclosure trim, are pulled out. Fig. 2 illustrates the removal of

an end of the wire. A pair of tweezers is used to remove a small section of the trim and expose an end of the wire. The tweezers are used to pull out the end of the wire.

Once both ends of the wire are available, the wire is heated, e.g., by connecting its ends to a battery. The heat causes the adhesive to heat-cut (loosen), and the display easily comes unstuck. When the repair is done, the cooled wire is re-embedded below the display, the adhesive is reapplied, and the display is fastened to the body of the mobile device.

## CONCLUSION

This disclosure describes techniques that embed a thin, heat-sensitive wire between the display and the adhesive that adheres the display to the body of the device. When the display is to be removed, the ends of the wire are pulled out and the wire can be heated, e.g., by connecting its ends to a battery. The heat loosens the adhesive, and the display can be removed with ease. When the repair is done, the now-cooled wire is re-embedded below the display, the adhesive is reapplied, and the display is fastened to the body of the device. The described techniques enable easy and non-destructive disassembly and repair of devices.