

The LED Stove Slider

A redesign of the conventional stove dial.

Purpose and Design Goals

Many stovetops employ a dial mechanism to control the heat settings. However, this dial lacks in immediate feedback and does not allow the user to change between settings in a swift motion. The LED stove slider aims to increase visual feedback as well as allow the user to change between heat settings in a quick and easy manner.

Interaction Design Studio I: Section C
Assignment 1: Control Redesign
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Premise

For this assignment, we were asked to improve a poorly designed control. Our main focus was to find a problem and design a realistic solution. We considered a user's context, environment, and intentions as well as affordance, feedforward, feedback, and perceptual motor skills.

Research

The problem that I chose to target concerned stovetops, especially those designed for electric stoves. Most stoves employ a dial to change heat settings that require a user to apply pressure and twist. This dial can be hard to maneuver to someone using it for the first time, as the perceptual affordance implies that a user can simply grab and twist all the way around. However, the dial does not allow moving in a swift concentric manner.

I also found that electric stoves lacked general feedback. In order for a user to know that the stove was on or working, they would have to wait and see if their food was actually heating. I saw the problem in energy waste due to unintentionally leaving the stove on, and started my ideation phase targeting this problem in mind.

Existing Models

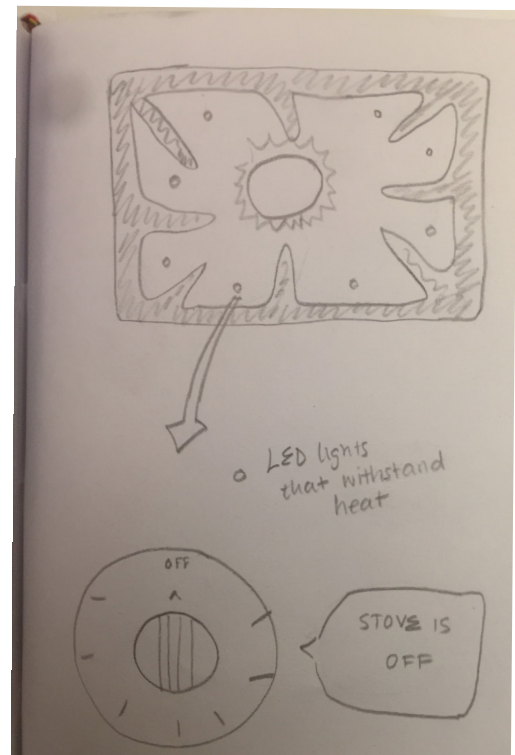
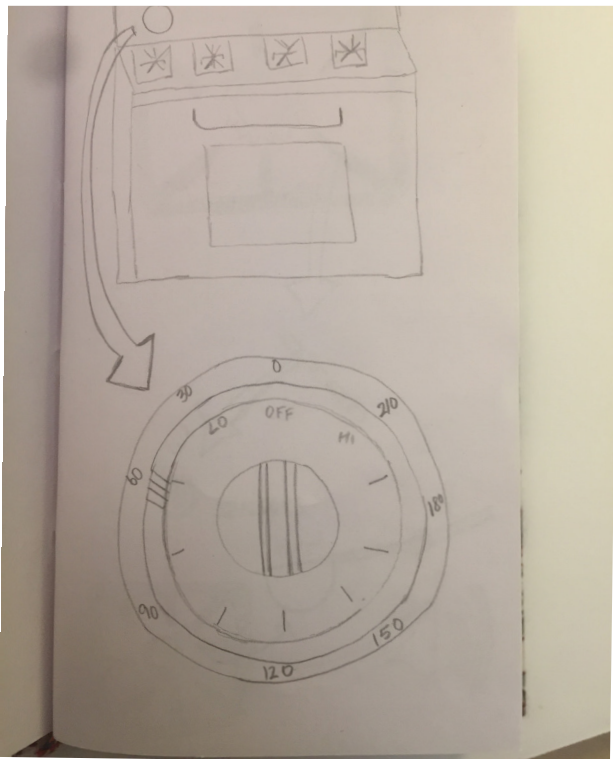
I researched some existing models to see the variation in designs. I found that some had a small, insignificant light to signify that the stove was on. Others didn't display any feedback but showed variation in how the settings were displayed.



Ideation

Initial Ideas

My first ideas concerned the energy waste of unintentionally leaving the stove on. I wanted to simply adjust the existing dial to provide more feedback to the user that the stove was on/off. I started with the idea of a built-in timer around the existing dial that a user could set before turning the stove on. This timer would shut the stove off automatically eliminating energy waste. I also thought of lights coming up directly from the burners as well as sensors on the burners that would track if something was still being cooked.



Critiques

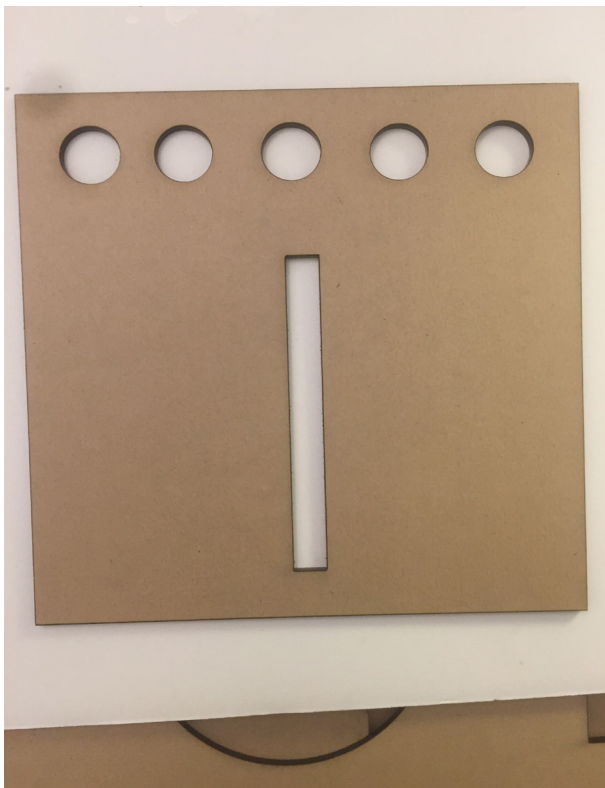
I came to class with my initial sketches and presented my thoughts to the group. I got some feedback of people liking the lights coming up from the burner, but that this would be redesigning the burner and not the control. I also got feedback that the built-in timer would not take into account situations where people would want to cook something for several hours. People also suggested looking into more dials because this may already exist. Overall, I didn't feel too confident in the progression of my ideas. However, I got some important feedback that maybe I wasn't addressing the right problem. People agreed that more than knowing that stove is on/off, which they could figure from feeling the heat over time, they wanted to know the progression of how fast it was heating. People suggested a progress bar that showed users how close the stove was to reaching the goal temperature so that they could cook their food properly and quickly.

More Research

From my initial research, I found that most stove dials were one in the same. At first I didn't see any problems with the dial, especially since it has been employed for so long without any big problems. However, after my critique I started reading online about problems that people wanted addressed concerning the dial. On many forums, people spoke about the dial no longer being appropriate for electric stoves. Unlike gas stoves, it takes a longer amount of time for the stove to heat to each setting. This makes it harder for users to quickly adjust the heat when necessary. From there, I decided to redesign the control in order to increase perceptual affordance and provide the user with greater feedback as to how fast the stove was heating.

Iteration

In my redesign, I wanted to employ a slider, so that the user could easily switch between different settings in a swift motion. The perceptual affordance of a slider also invites a user to slide it, unlike the existing dial which relied on pressure. I also wanted to use LED lights to provide visual feedback through a progress bar and lights coming up from the burners.



The initial prototype was made out of acrylic with 5 lights that made up the progress bar and a vertical slider to adjust heat settings. The problem with a vertical bar, was that it was difficult for a user to lock into a particular setting as the bar would have difficulty staying in position. Also, the motion in which to increase the heat was unclear. The initial five lights also seemed overbearing.

Final Design



The final design is made out of acrylic, with a horizontal slider that can be used to adjust heat settings and 3 LED lights to show heat progression. The LED lights provide visual feedback, as when the third light is lit up, a user would know that the stove has reached its correct setting. The lights also give the impression of heat and that the stove is on and working. The slider shows affordance in its easy to maneuver and adjust design. As a user slides, the first light will turn on, signifying that heating has begun, and that as the user slides, the heat will increase. I also decided to make an acrylic burner as well to show the visual feedback that the stove was on. The lights around the burner will light up when the stove is on and will turn off when the stove is off.

Reflections

Throughout the design process, I struggled with finding a problem within the context that was worth solving. Although my redesign was simple, I believe that it works to solve the problems it set out to solve. This design is inexpensive, easy to use, and can easily replace existing controls.