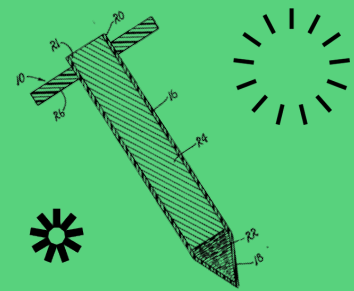


Pop-up Timer Experiment



Inventor Supply List

- Glass ramekin dish
- Crisco shortening (½ cup)
- Spatula
- Shallow frying pan
- Water
- Ping Pong ball
- Optional: meat thermometer
- Optional: dish towels (for spills)

Safety: Adult assistance and supervision is recommended for this activity.

Procedure

1. Use a spatula to fill the ramekin with Crisco, ensuring that the top is level and smooth.
2. Hand wash and dry the ping pong ball, then gently push it through the Crisco in the center of the ramekin until it is halfway to two-thirds submerged. Remove any excess Crisco with the spatula and smooth out the top.
3. Fill the frying pan about halfway with water, then place the ramekin in the center.
4. Place the frying pan on the stovetop and set it to medium heat. The water should not reach a rolling boil; if necessary, reduce the heat to a slightly lower setting.
5. After a few minutes, the Crisco will become liquid at the bottom of the ramekin. As the Crisco continues to melt, observe the ping pong ball's behavior. How does it respond as the temperature begins to rise?
 - Optional: Use a meat thermometer to measure the Crisco's temperature, being careful not to disturb the ping pong ball. At what temperature does the ping pong ball react?

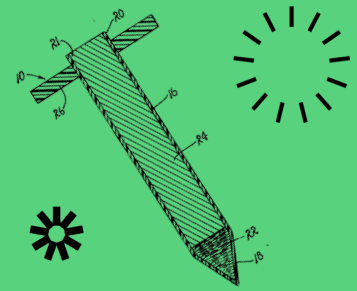
Watch as the ping pong ball pops up through the heated Crisco like a pop-up Turkey Timer. How can the ping pong ball's reaction be used to show temperature when a traditional thermometer isn't available?



The mission of the Cade Museum for Creativity & Invention is to transform communities by inspiring and equipping future inventors, entrepreneurs, & visionaries.

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Pop-up Timer Experiment



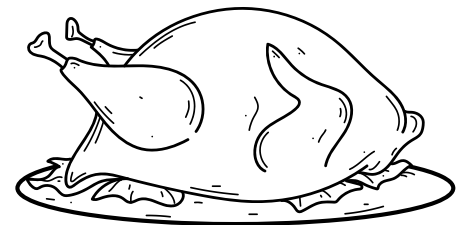
What Happened

Crisco melts at 117°F, transforming from a solid to a liquid with the ping pong ball inside, mimicking how a turkey pop-up timer works. A turkey needs to reach 165°F to be fully cooked and safe to eat. Pop-up timers contain metal or wax that melt at that temperature, releasing a spring to signal it's done. In your Crisco experiment, the ping pong ball signals that the Crisco has reached the right temperature by popping up.

In 1966, the U.S. Patent and Trademark Office granted a patent for a "thermally responsive signaling device," (#3,280,629) or what would eventually become known as the Dun-Rite pop-up turkey timer. The patent was an improvement on an earlier one filed by the same man, George G. Kliewer.

Read On!

In the 1960's, George "Goldie" Kliewer transformed Thanksgiving cooking with his invention of the pop-up turkey timer, ensuring perfectly cooked turkeys every time. Drawing inspiration from the mechanism of emergency sprinkler systems, Kliewer designed this innovative timer to "pop up" when the turkey reaches the ideal temperature.



This clever device allows cooks to relax and enjoy the company of family and friends, knowing their turkey is sure to be the star of the Thanksgiving feast!



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