



Cooking With Machines

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by Julie Meyer Sheets

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Breakfast Club

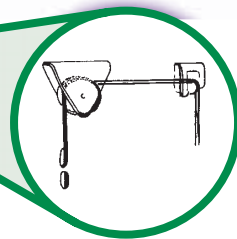
When the alarm went off last Saturday morning, I jolted awake and nearly fell out of bed. Still sleepy, I stumbled along the dark hallway. I went downstairs and into the dark kitchen.

Halley was coming over for breakfast. She had been my neighbor and friend since the first grade.

With my eyes used to the darkness, I walked over to the window blinds. It was supposed to be a nice day. It was time to let some light into the kitchen.

I tugged down on the cord to raise the blinds. Suddenly the sunlight poured in! Ouch! The light was blinding. My eyes weren't ready for the action of a simple machine—a pulley—that I had operated to open the blinds.

Now I was fully awake. It was time to plan the menu. What had Halley said that she wanted to eat? Oh, yes, corned beef hash. I hoped we had some of that. I call it cat food, but it's a favorite treat of Halley's.



Pulleys open and close window blinds.

🔊 I searched through the cabinet. I found a can of hash near the back, among rows of cans stacked end on end.

🔊 Now I had to open it. “Where is that can opener?” I mumbled to myself.

🔊 After searching through some drawers, I finally found it. I put the can opener blade just inside the rim of the can. Then I squeezed the can opener’s handles together. The handles of the can opener gave me enough leverage to force the sharp blade into the can. I could hear a faint crunch. An unpleasant odor poured out of the can.

🔊 “How could anyone like this stuff?” I asked myself.

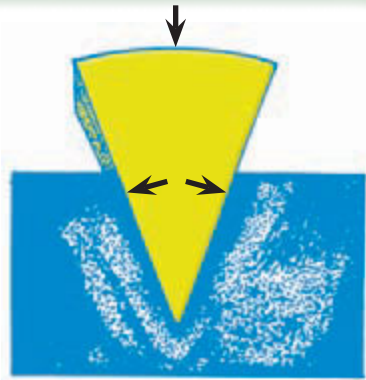
🔊 I turned the crank and the can turned as the blade sliced through the metal. It was easier to open than I thought.

Machines open food

🔊 Can openers have several machines that can help you open your food. The blade is a wedge. The crank turning the blade acts as a wheel turning an axle. The handles are levers.



A wedge is thicker on one end than the other. When you push down on the thick end, the wedge redirects your force out to either side. This is how knives and other blades push things apart.



The can opener happened to be a clever combination of several simple machines. The blade on the can opener was a type of wedge. The wedge was thicker at the top than at the bottom, so I had been able to focus more force onto a smaller area. The crank that turned the blade was a wheel turning an axle. The handles were levers that made it easy to puncture the metal. And that early in the morning I needed a machine to make my work easy!

Help at Last

I emptied the hash into a pan to warm it up. I wondered what else I could prepare to make the breakfast taste better. I stuck my head into the refrigerator. I noticed a carton of eggs.

“Good! They’re not expired,” I said to myself. The date stamped on the carton was four days away.

Ringggg! It was the doorbell.

“Oh, hi, Halley. I’m glad you’re here to help me with the rest of this meal. I’m worn out from all of this cooking.”

Upstairs, my sister Kaitlin, a junior in high school, was still snoring in her warm bed. No one had used the pulleys on her blinds this morning to wake her up.

The night before, Kaitlin had told me that she might eat with us. She likes omelets with vegetables. Not that I cater to my sister's every wish, but Halley and I did look around to see what we could find to make a veggie-style omelet, mainly because we like them, too.

Back in the pantry, I grabbed a jar of mushrooms and checked the refrigerator again. "Boo!" My sister had sneaked up behind me. I jumped, and my head hit Halley's. I almost dropped the mushrooms. I shook it off as Kaitlin laughed and Halley rubbed her head.

We turned our attention back to the refrigerator to find some fillings. We found a fresh green pepper that was ready for chopping. We gave Kaitlin the chopping job because she had the most experience with knives. She got out the cutting board and began to use the knife without even thinking of the knife as a wedge! Like the sharp blade on the can opener, the blade on the knife tapered, or thinned, toward the cutting edge.

While Kaitlin chopped, I was still searching. Nothing else in the fridge looked good except the lettuce, and that might turn mushy in an omelet.

Next, Kaitlin used her wedge to cut a piece of butter for the frying pan. It was time to fry the peppers. She turned on the burner beneath the pan to low. The butter began to melt, and then to bubble, and then to turn golden brown.

🔊 Kaitlin tilted the cutting board over the pan. Then she slid her freshly-chopped peppers into the melted butter.

🔊 The smell in the kitchen was really mouth-watering now, despite the presence of the hash. We were getting pretty hungry at this point in our breakfast project.

🔊 I remembered the mushrooms. I thought they would taste great cooked in the butter, too. But where had I put the jar?

🔊 “Halley, do you know where I put the mushrooms?” I asked impatiently. Halley had been savoring the aroma of the yucky hash on the back burner.

🔊 Halley retrieved the mushrooms from the counter next to me, and I opened the jar with a pop. The lid had twisted off a screw, which is a type of inclined plane, at the top of the jar.

🔊 I drained the juice off the mushrooms. Then I let Kaitlin dump the mushrooms into the pan of sizzling peppers. All three of us were watching the frying pan intently.

🔊 **The top of a jar with a screw-top lid is an inclined plane wrapped around the jar.**



🔊 Kaitlin asked whether Halley and I would like an *omelette au fromage*. We didn't know what she was talking about. And I was annoyed by my sister's attempt at showing off what she had learned in French class. "Silly girl," Kaitlin said. "It's just French for cheese omelet."

🔊 "Whatever you want to call it, Kaitlin, I'll eat it. I'd love a cheese omelet!" Halley nodded in agreement.

🔊 Halley and I went back to the refrigerator. We looked in the meat and cheese drawer. We needed a type of cheese that would melt easily in the omelet. Wrapped up tightly in foil was a triangular wedge of cheese. We were happy with the find. We pulled out the cheese and found a cheese grater.

🔊 We put the block of cheese into the grater. Halley liked to grate cheese, so she became the official grater. Halley held the grater firmly and turned the handle. The handle of the grater turned a cylinder that was covered with tiny wedges for cutting cheese. Cheese fell from the grater like snow.

🔊 **A rotary cheese grater is an example of a machine that uses a wheel and axle.**

🔊 Handle = Wheel

🔊 Cylinder = Axle



Main Course

It was time to make an egg mixture for our splendid omelet. Halley got out a mixing bowl. Kaitlin grabbed the milk from the refrigerator. With careful aim, Halley cracked six eggs onto the side of the bowl, one by one, and slid them into the bowl.

“Watch out for those eggshells!” I teased Halley. “Crunchy omelets are not what we are looking for here.”

Meanwhile, Kaitlin was trying to remember Mom’s recipe. “How much milk do you pour into the bowl for each egg? I seem to remember something about half an eggshell full for each egg,” Kaitlin mumbled. “I think we even can substitute water for the milk.”

“Whatever, Kaitlin,” I groaned. “Just pour in some milk. We’re starving!”

Kaitlin beat in the milk with a fork, producing a smooth, pale yellow egg mixture. Next, she heated a pat of butter in a clean frying pan. After the butter had melted, she poured in the eggs and tilted the pan a bit to each side to distribute the mixture. I spooned the sauteed veggies across the surface of the cooking eggs. Then I topped the whole thing with Halley’s grated cheese. Kaitlin put a lid on the pan and turned down the heat. We gave the eggs time to cook, and the cheese time to melt.

Kaitlin poked through a drawer and found a spatula. Then from the cupboard, she pulled down a large serving dish.

It was time to serve. Kaitlin guided the end of the spatula under the omelet and then she tilted its handle, using the spatula as a lever to fold the omelet in half. She tilted the pan over the plate and again slid the spatula under the omelet. She used the spatula to gently raise and coax the omelet from the pan.



A spatula can be used as a lever.

Chow Time

Kaitlin put the omelet on the table, and I plopped down in a chair closest to it, while Halley watched Kaitlin spoon the hash into a serving bowl.

But wait! We had forgotten the toast!

I asked Halley to put some slices of bread in the toaster. She did, and she pushed down on the handle to lower the bread slices next to the heating coils.

Meal time had come at last! After what had seemed like hours, we were enjoying our delicious food—not counting the hash, of course.

🔊 I put my portion of our veggie and cheese omelet on a piece of toast. Halley preferred to have hers with a dollop of hash. Kaitlin served herself a monster sandwich: a double-decker with one layer of hash and one layer of *omelette au fromage*.

🔊 We did not speak for a full five minutes as we enjoyed our meal. But then I realized something.

🔊 “We don’t have any drinks,” I said. “And we’re out of juice.” Halley and Kaitlin agreed that we needed something to drink, and water and milk didn’t sound good. Then, I remembered a drink that we had made at Halley’s recently that had been even better than plain juice.

🔊 “Smoothies!” I yelled. Smoothies were so good. All you needed was frozen fruit, frozen yogurt, juice, ice, and a blender. We jumped up from the table.

🔊 “We don’t have the juice, but I’m pretty sure we have some frozen yogurt and fruit in the freezer,” I said.

🔊 Halley moved to the door. “I think I have juice at home. I’ll be back in a flash.”

🔊 Kaitlin and I started finding things for the smoothies. I got out a container of ice. She found the frozen yogurt and strawberries. We even found packs of blueberries and raspberries.

🔊 As we waited for Halley, we got out the blender. I hoped that Kaitlin would remember how to put the blender together.

🔊 Kaitlin and I found all of the blender’s parts. It had a cutting tool, a rubber disk, and a screw-on clamp to hold

all of these pieces at the base of the pitcher. The base of the pitcher sat on an electrical control unit with a motor that helped chop, beat, and blend the frozen berries.

🔊 I had never thought about it before, but the blender had several individual parts that were simple machines. The cutting tool had blades, which were wedges. Each screw surface was an inclined plane, just like the screw surface on the mushroom jar. The electrical unit turned a small axle, which turned the cutting tool inside the blender. It worked like a wheel and axle in reverse. Turning the small axle gave the large cutting tool lots of force.

🔊 I turned to Kaitlin. “What’s taking Halley so long?” I asked impatiently.

🔊 “Just hold on a minute. She’ll be right back,” said Kaitlin. Just then, Halley came through the front door with a gallon jug of orange juice.

🔊 **Blenders have several simple machines.**







🔊 We began making our smoothies. I added some ice and frozen yogurt to the pitcher. Halley poured in some orange juice. After adding some strawberries, I decided to put the other frozen fruits back in the freezer. Kaitlin snapped the lid on the pitcher, and pushed the chop button. The cutting tools spun around and chopped and mixed up ice, yogurt, fruit, and juice into a swirling pinkish-orange slush.

🔊 Pleased with the texture of the thick, cold beverage, we poured it into three cups. The smoothies were delicious. We made another batch and poured some of it into one of my water bottles for Halley to take home. The screw-top lid sure was important when she tripped on her way out. Not a drop spilled!

🔊 **This water bottle has a screw-top lid. A screw is a type of inclined plane.**



Think and Write

-  **1.** What is the advantage of using a simple pulley to do work?
-  **2.** Explain how a wedge redirects force.
-  **3.** Use a drawing to help explain why a screw is an example of an inclined plane.
-  **4. Technical Writing** Select one of the machines described in this reader. Write a one-paragraph technical description of how you would use this machine to help with an everyday task. In your paragraph, include an explanation of how the machine makes the task easier.

Hands-On Activity

Recipes Find a recipe for one of your favorite foods. Identify any simple machines that you would need for each preparation step. Then pretend that you are a TV chef. Explain to your audience how the tools work.

School-Home Connection

Simple Machine Search Share this reader with a family member, and then challenge this person to find at least five simple machines in your home. Have them look for examples that represent at least three of the following types of simple machines: 1) lever, 2) inclined plane, 3) screw, 4) wedge, 5) wheel and axle, and 6) pulley.

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