

ENERGY-WORK

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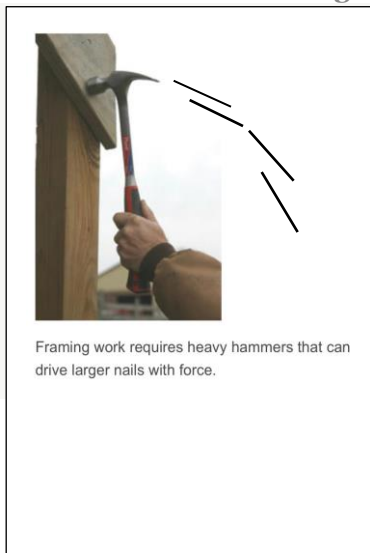
Austin, Texas, USA, jpcise@austincc.edu & New York Times, 6/12/19 by Thomas Fuller

He Tried to Plug a Wasp Nest. He Ended Up Sparking California's Biggest Wildfire.

Firefighters battled the Ranch Fire near Ladoga, Calif., in August. The blaze was part of the Mendocino Complex Fire, which burned around 460,000 acres. Credit Noah Berger/Associated Press



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Framing work requires heavy hammers that can drive larger nails with force.

INTRODUCTION: This 16 lb. hammer Head traveling at 30 mph(44 ft./s.) Causes a nail to go into wood 1 inch (1/12 ft.). Thus, the hammer head had Kinetic energy K lost to work done on nail.

QUESTIONS: (a) Find K of hammer head? (b) Find ave. force on nail by hammer? (c) Ave. force in (b) is friction force on nail. If hammer head was moving at 40 mph(58.6 ft./s.) find K at 40 mph?, (d) How deep($X=?$) could nail be driven in to wood at 40 mph?

HINTS: $K = \frac{1}{2} mv^2$, Work = $W = Fx = \Delta K$

ANSWERS: (a) 484 ft. lb., (b) $F = 5808$ lb. (c) 860.272 ft. lb., (d) $x = 1.78$ inch

POTTER VALLEY, Calif. — It was a fire that crossed mountain ranges and valleys, that spanned multiple counties and shocked Californians by its sheer scale — by far the biggest wildfire in modern state history. And yet a newly disclosed investigation suggests it was probably started by a single man and a single spark. In a report released in recent days, forensic investigators found that **a rancher started the fire ((when hammering a metal stake in his backyard to snuff out a wasp nest. Sparks flew, igniting dry grass stalks))) and spreading fire quickly across the desiccated landscape.** The rancher's name was not disclosed, but a review of records led to the home of Glenn Kile, a former heavy equipment operator in his mid-50s, who had no inkling of the devastation he would unleash on a Friday morning last July while tinkering in his backyard. Seeing the fire, he said, came as a shock. "I smelled smoke, I turned around, and there it was," Mr. Kile said in an interview on the porch of his barn-red, two-story home this week. Mr. Kile, who has not talked publicly about the fire before, referred to it as if it had been an apparition. "There was nothing I could do," he said. During a morning of chores on his ranch three hours north of San Francisco, **((he had spotted an underground wasp nest. He grabbed a metal stake and pounded it into the hole to try to seal it off)))**, according to an investigation by California's fire agency. He told investigators he was allergic to stings and wanted to plug the hole. He was judged responsible for the fire, but not negligent. Under the heading of violations, the report says "Not Applicable." The ignition of the so-called Ranch Fire is a testament to the extreme fragility and volatility of the American West, fire experts say. California in particular is such a tinderbox that something as seemingly innocuous as hammering a stake into the ground can unleash an uncontrollable inferno. **Thousands of firefighters worked for more than a month to extinguish the Ranch Fire, which destroyed more than 150 homes and cost tens of millions of dollars to suppress. The fire burned 410,203 acres of California wild lands, an area half the size of Rhode Island, and killed a firefighter who was struck by a falling tree.** Although it was one of the largest fires, it was far from the deadliest. The fire in Paradise, Calif., in fall 2018 killed more than 80 people.