



## Toy truck for the boy

Steam-powered pickup truck, only 4¼ in. long, is complete with engine, boiler and gear drive. Materials come in a handy kit.

by John Burroughs

**D**r. J.R. Senft, a mathematics professor at a small North Dakota college, eyed the toy pickup his young son had received as a Christmas gift, and thought: What a pity the little truck didn't run.

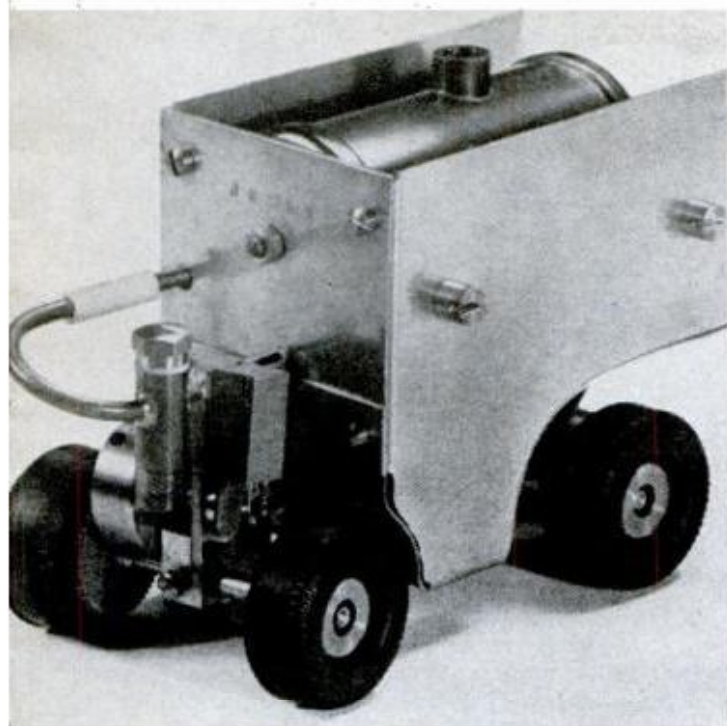
He made drawings. Taking the 4¼-in.-long toy pickup apart, he discarded all plastic parts and salvaged the pressed-steel body shell and rubber tires. Then he rebuilt the truck on his small Unimat lathe.

First he machined new wheel hubs from bearing bronze and fitted the wheels on stainless-steel axles. Next he built a tiny ⅜-in.-bore by ⅜-in.-stroke oscillating-cylinder steam engine not much larger than your thumbnail and mounted the engine to drive one of the truck's front wheels through 5:1 reduction gears from an old clock. Then he assembled a sheet stainless-steel firebox and built in a 2-in.-long, alcohol-fired brass boiler to supply steam at 15 to 20 p.s.i. working pressure. The firebox serves as the truck's chassis and has slotted studs that mount the body shell.

The finished precision-built pickup runs six minutes in a five-foot circle on ½ teaspoon alcohol and 1½ teaspoons distilled water at a scale speed of 50 mph.

The firm that markets Unimats, American Edelstaal, Inc., has designed a kit of





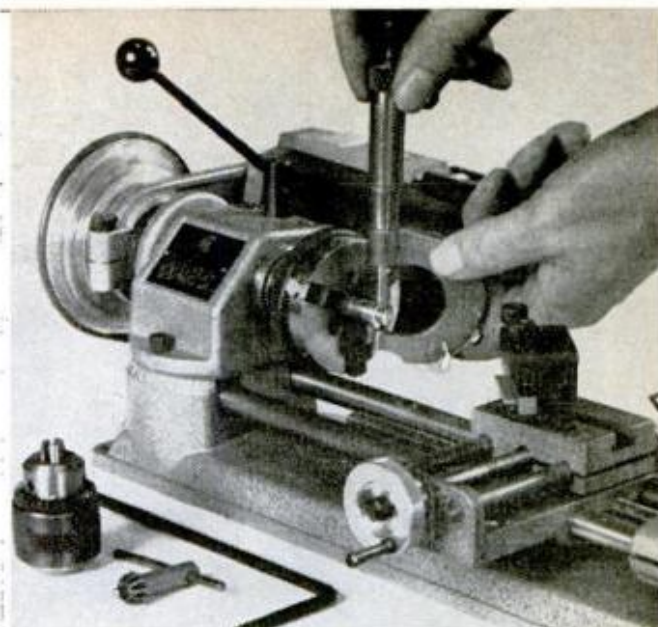
**Assembled chassis** ready for body shell. Body mounts in slotted studs riveted to sides of firebox.

## in every man

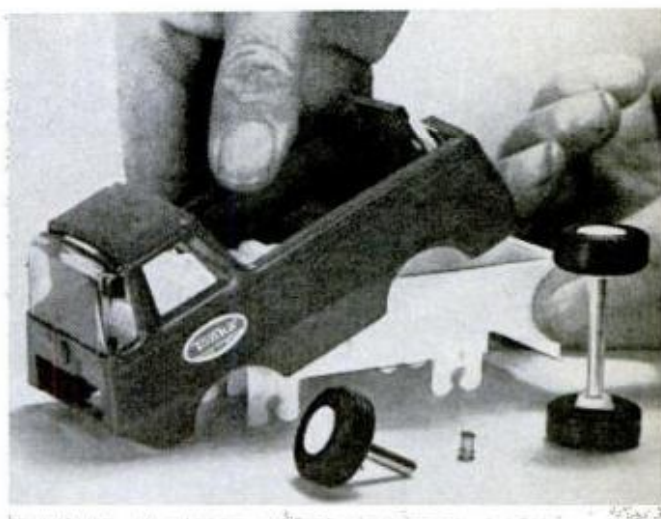
materials that contains a Mini-Tonka toy truck, rough-cut bronze and stainless steel for all parts, and all fastenings, plus complete drawings and illustrated how-to instruction booklet.

To simplify the job, the drawings are arranged in four sections that show the engine, boiler and burner, running gear and the firebox. With the parts machined as shown, construction is simply a matter of assembly. The machinework can be performed on any small metal lathe. The silver-soldering required can be accomplished with an ordinary propane torch. The 10 photos on the next two pages take you through the steps of making and operating the little truck.

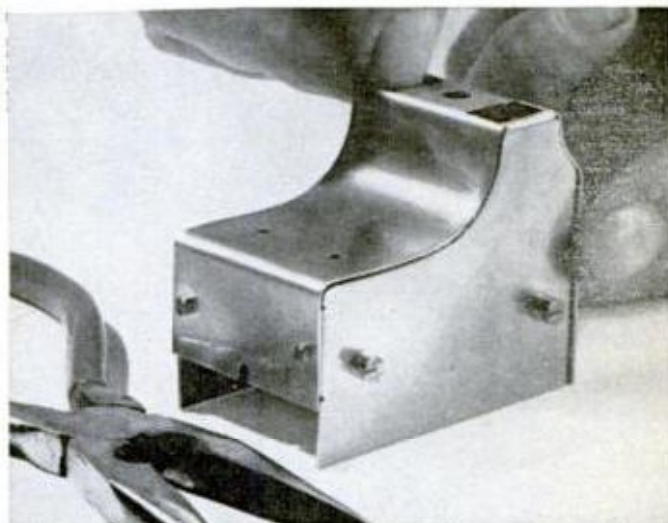
You can order a kit directly from American Edelstaal, Inc., 1 Atwood Ave., Tenafly, N.J. 06770, for \$19.95 postpaid. ★★



With a modelmaker's lathe, the truck's parts can be machined to exact size and checked with a micrometer, or machined to fit its mating part.

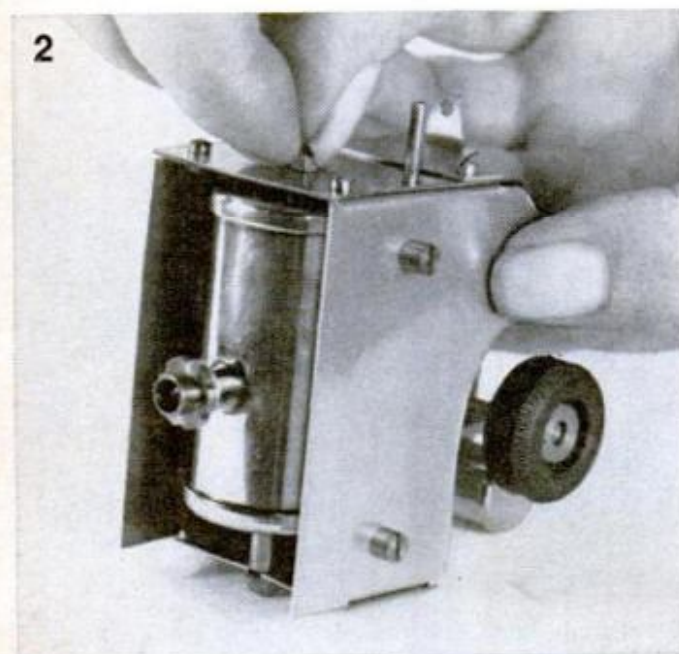
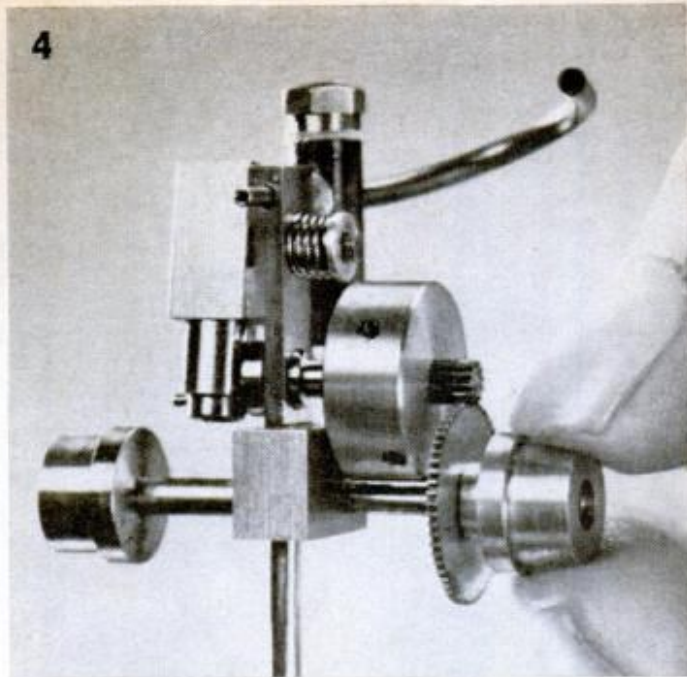
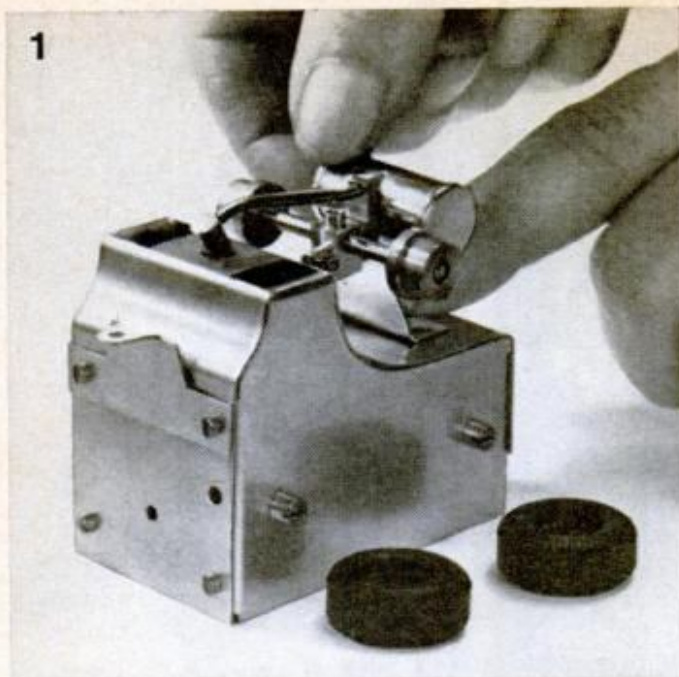


**Steel body shell** and the rubber-tired wheels are salvaged from a Mini-Tonka toy pickup truck. The truck's plastic chassis is discarded, new wheel hubs are made.



**Firebox** which serves as truck's chassis is formed from sheet stainless steel and assembled with machine screws. Bottom openings supply air to burner.





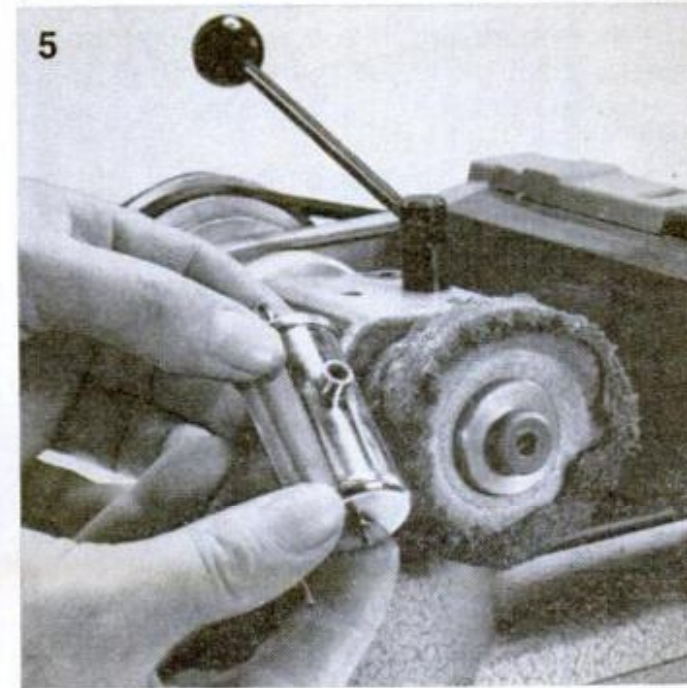
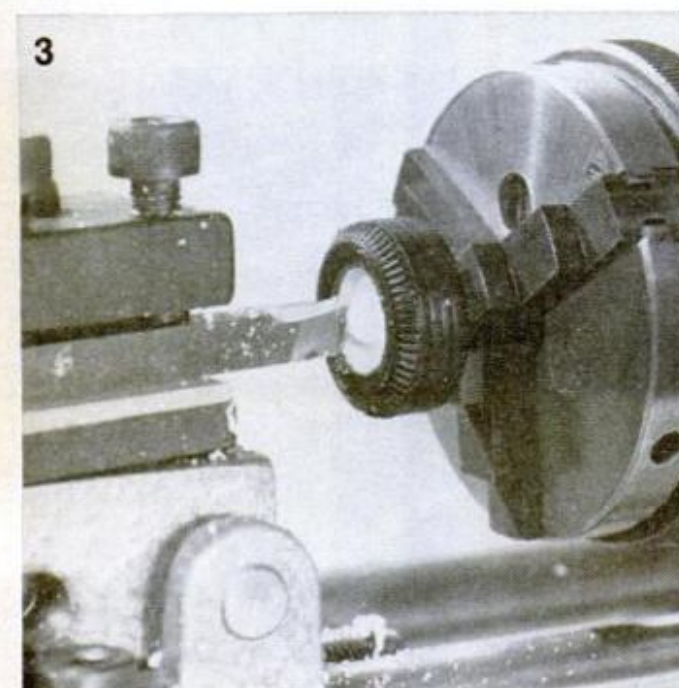
1. **Rear-axle assembly** and the fuel tank mount on a bracket that is bolted to the firebox. Alcohol fuel flows to burner's wick through a brass tube.

2. **The boiler mounts** inside the firebox with studs silver-brazed to the boiler's end caps. Firebox is lined with asbestos paper to conserve heat.

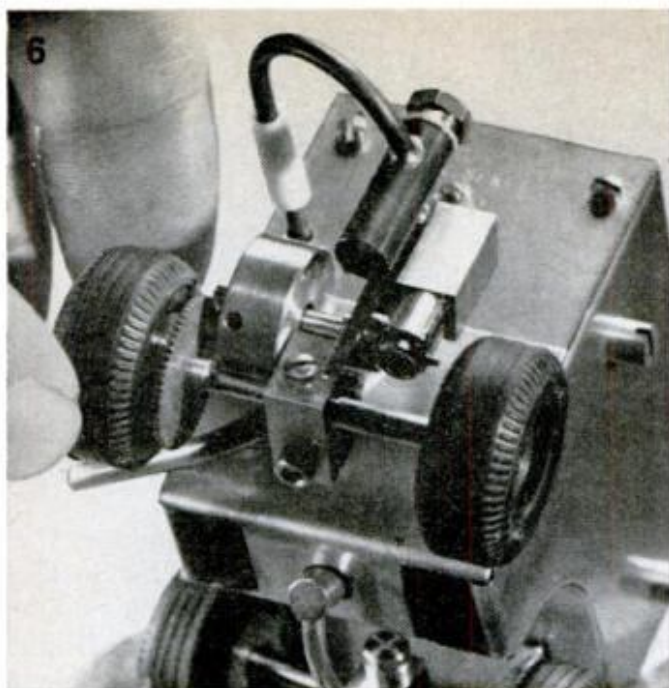
3. **Tires are slipped off** original plastic hubs by turning out hubs a bit. Plastic hubs are replaced with bronze ones and then fitted with new axles.

4. **Tiny single-acting steam engine**, machined from brass and stainless steel, gear-drives truck's right front wheel. Gears are from old clock works.

5. **Completed truck** has look of a precision instrument when brass, bronze and steel parts are polished with cloth buffing wheel charged with rouge.







**6. Front-axle assembly** is set at a slight angle to make the truck run in a 5-ft. circle. Steam engine powers truck at a scale speed of 50 mph.

**7. Boiler's safety valve** in top has an adjustable spring-loaded core that maintains the steam pressure at 15 to 20 pounds per square inch.

**8. The 2-in.-long brass boiler** mounts in stainless-steel firebox which also serves as truck's chassis. Here, side of firebox is removed to show boiler.

**9. Eyedropper** is used to fill fuel tank with one-half teaspoon of alcohol, powering truck for about six minutes. Burner's wick is lighted with match.

**10. Distilled water** prevents formation of mineral deposits in steam system, is added through safety-valve hole. Displacement lubricator lubes engine.

