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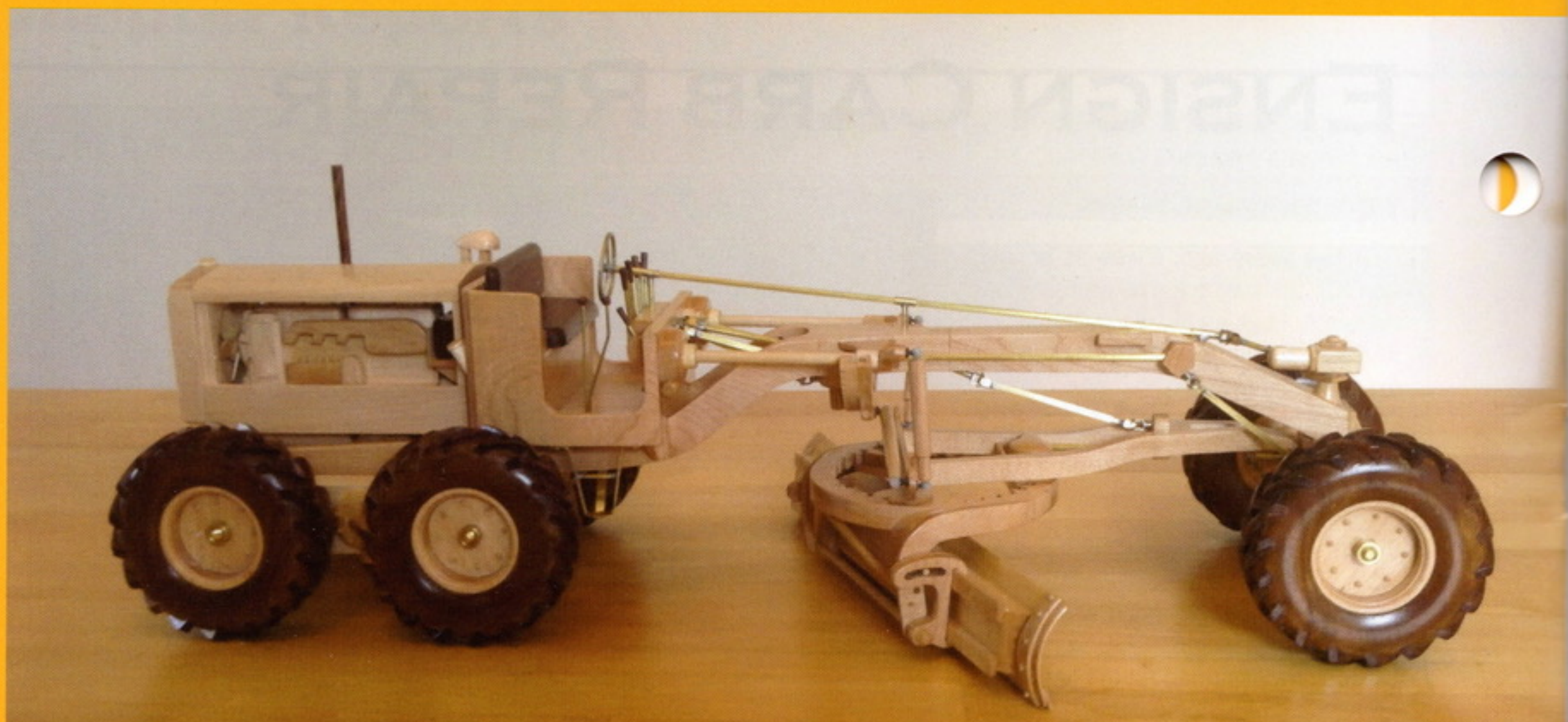


Simplicity of Wood Makes for Beautiful Model

By Richard Johnson

Bill Kirchen is a singer/songwriter who plays a Fender Telecaster guitar. He wrote a paean to said guitar with the song "Hammer of the Honky Tonk Gods."

The guitar, he wrote, was "born at the junction of form and function." The Telecaster is a slab of wood with a neck and strings attached. Nothing fancy, but stylish just the same. Industrial machines are like that. Locomotives, tug boats, and construction machinery are designed to do what they do and the form follows, sometimes beautifully.

I have been fascinated with Caterpillar graders since I was a child. There is something special about them that sets them apart from Adams, John Deere, Galion and any other brand – something that makes them a Cat. I think it's the shape of the engine compartment, which is really nothing more than a stationary engine mounted onto a frame, that I find attractive. I'm not alone. When my ACMOC club Chapter 16 visited the Quinn Caterpillar headquarters awhile back, they had a nicely restored Cat D2 in the lobby.

One of our members said to no one in particular, "Geez, that's just stinkin' beautiful." Amen to that.

After I retired, I came across a set of plans to make a toy excavator out of wood. I had had these plans for years and made a couple of half-hearted attempts to build the thing but always got stalled at making the tracks. There didn't seem to be any easy way to mass-produce the track sections and grousers. I finally dived into it and ended up with a nice model.

Feeling my oats, I sent for plans to build a lattice boom crane. This was more difficult and had another set of tracks, but was much more detailed than the excavator and I was happy with the result. Both of these were sort of generic machines.

I then sent for plans for a wooden scraper. At that time I decided to use the plans as a foundation, but to modify them to be a more realistic representation of a real one. However, one day things changed radically. My Chapter 16 club meets at the Antique Gas and Steam Engine Museum in Vista, California. There are two vintage Cat No. 12 graders there and my eye fell on one whilst talking to one of my friends. I blurted out, "I'm going to make a grader instead of a scraper." Little did I know what I was getting myself into.

I've always loved realistic toys. They had to look like the real thing and had to work like the real thing. I never owned a Tonka toy for that reason; they looked like a Tonka toy, nothing else. I was determined my grader would look like a real one and be proportionate. The front wheels had to lean. The blade had to operate properly. It had to steer.

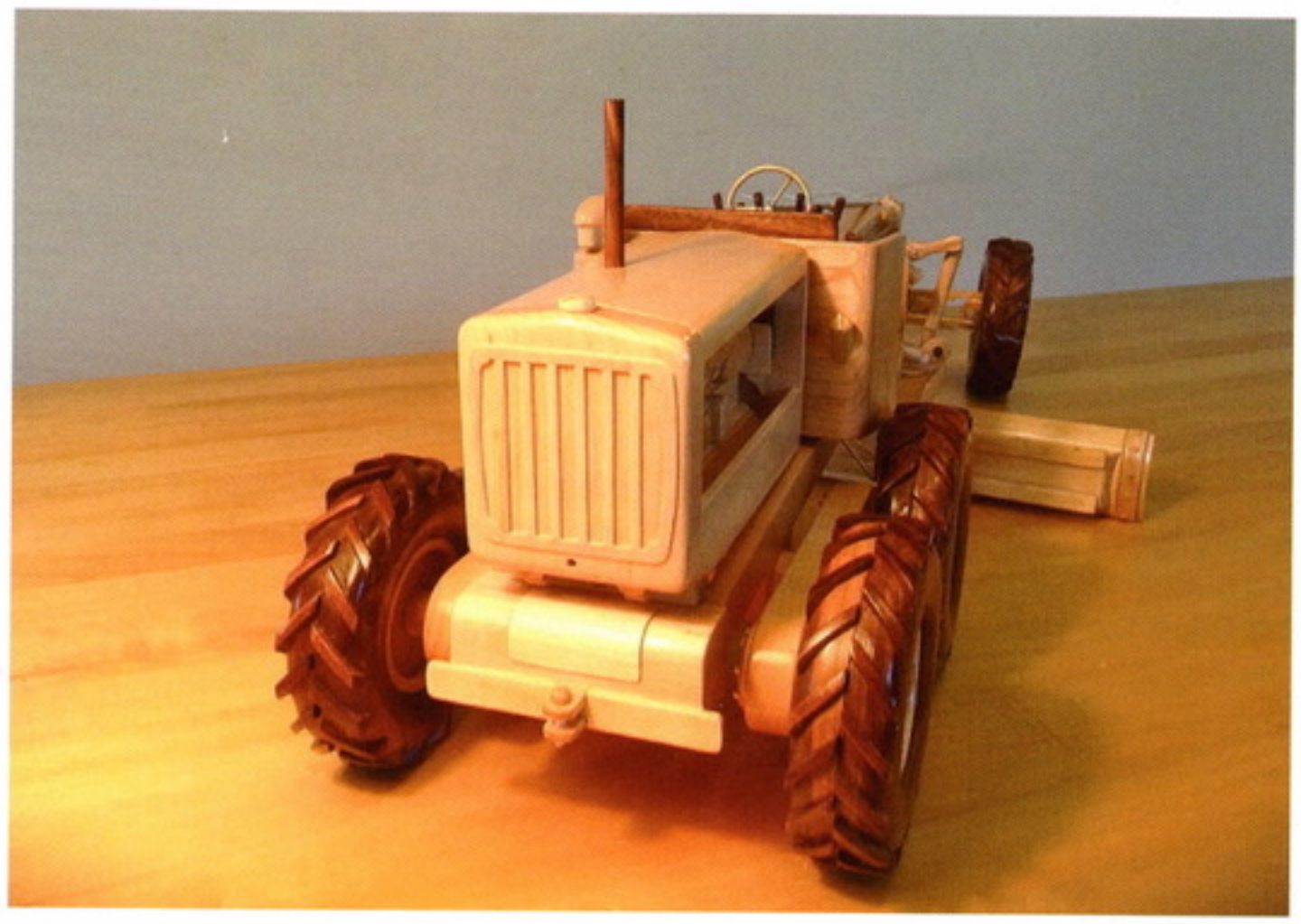
Not having plans or blueprints to go by I began to collect photos of real graders. I took a bunch at the Vista museum. I took more photos whenever I saw an old grader parked somewhere. I also have a 1/24 model made by Ruehl (Ertl) that is very accurate. Each time I started to build something I found

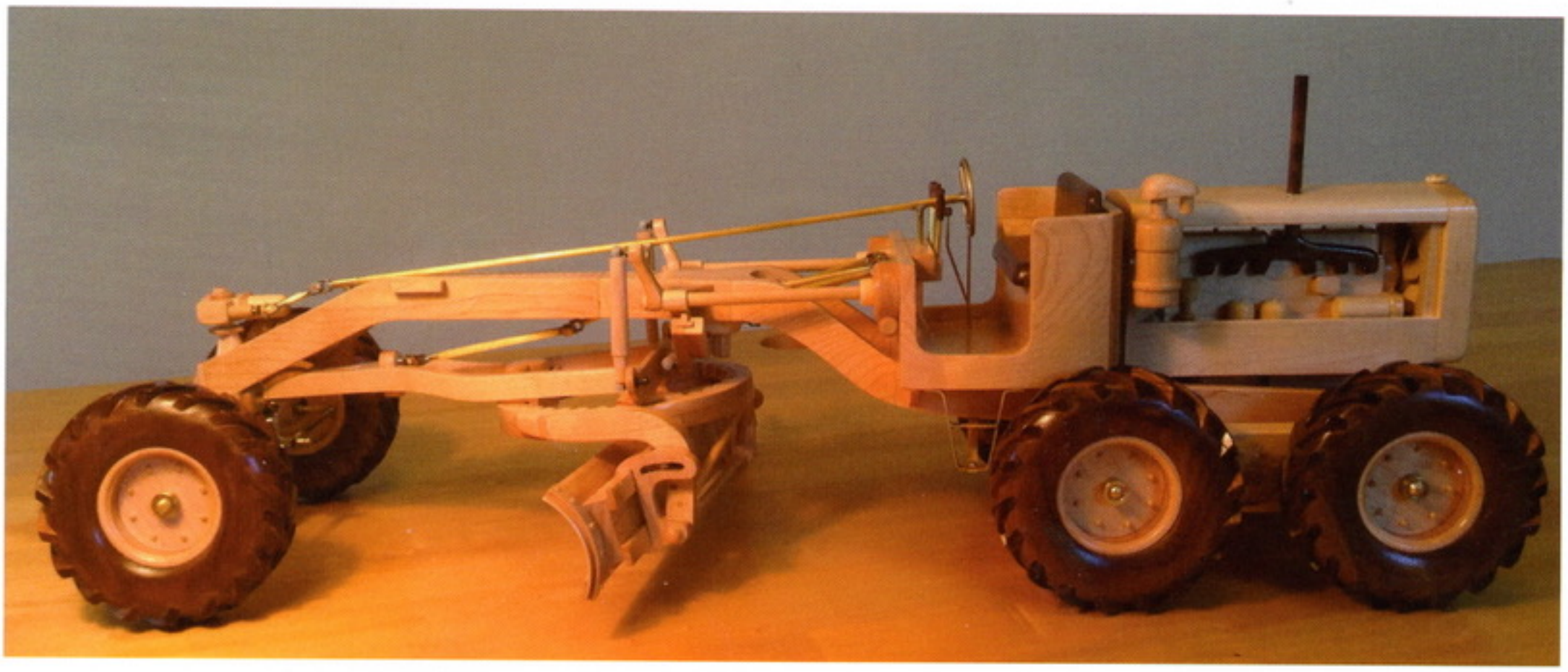
more information I was lacking. Between my visits to Vista (which is 100 miles away), I built some things from the specs I could find on the Internet. On subsequent trips to Vista, I'd fill in the blanks with more photos and measurements and conscripting my wife to help me draw patterns.

My model is 1/12 scale and totally scratch built. It is about 26 inches long and made out of maple, with walnut used for the tires, manifold and control knobs. The drive shafts, steering wheel, and control levers are brass. The finish is clear gloss lacquer. I bought a few ball and socket units from a model shop for the blade hangers.

From conception to completion took 18 months. Don't ask how many hours are in it. Certain things gave me fits and I spent weeks (months?) trying to figure out how to go about this and that. The wheel lean in particular was one of those "this and thats." Caterpillar was not shy about changing their designs. There is an arm coming out of the steering knuckle that in various incarnations goes from crooked to straight. Finding the straight version was like a "eureka" moment as far as my model was concerned and eased my job considerably as this is a much simpler design.

Whoever figured out the wheel lean mechanism in the first place is a genius because, in addition to leaning, they have to steer and the axle has to pivot too; sometimes all at the same time. I was able to copy the basics with a few prototypes. I've spent hours, days, studying this aspect.





As I mentioned above, I could make a few parts from specs without having plans for the frame and engine. So I tackled the wheels, tires, and blade first using the numbers found in brochures. Ahh... the specs say the blade is 24". That would make mine 2" high. When I finally got back to Vista and measured the real blade, it was only about 21" from top to bottom. Turns out the 24" number is the height of the blade when the steel is flat. When formed into the arc for the moldboard the height is lessened. So I had to cut my blade down. Better that than adding to it.

I then got to the point where I was forced to make a full-sized 1/12 drawing of the frame that I could work from. I've never done any drafting so this was daunting. To make matters worse, these graders don't have too many square corners. Things angle up, down, in, out, the cab has curved sides, and the subtleties of the engine that I like so much are some very slight curves but make a world a difference if they're not done right.

Had I known how difficult this project was at the onset I probably wouldn't have attempted it. But once I had shown my friends some of the initial parts, I was committed. You know how it goes, "Hey, when are you going to finish your grader?"

Being retired and having a lot of time is both a blessing and a curse. It's a blessing because I'm not under the gun to finish things by a certain date and work on things at my leisure. It's a curse because with an open-ended completion date I have the time to add more details, hence more fits and brain cramps.

The engine fan is a case in point. I