



Fig. 1. Cut the compound angles for the cowcatcher on the end of a 10-in. piece of stock then cut to length.

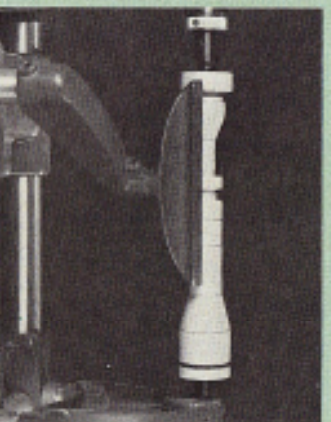


Fig. 2. Turn the boiler and smokestack at the same time from a 12-in. long piece of turning stock.

first scoring a 1/8-in. deep wheel rim line on one side of a piece of 3/8-in. stock with a 2-in. hole saw. Then, using a 2-1/2-in. hole saw, cut out the wheels. For the front wheels (W) follow the same process, but use the 1-in. and 1-3/8-in.

List of Materials

(finished dimensions in inches)

A	Base	3/4 x 2 x 9-1/4
B	Boiler	2-1/4 dia. x 6-3/4
C	Smokestack	2-1/4 dia. x 2-1/2
D	Cab	3 x 2-1/2 x 2-3/4
E	Windows	1/4 x 1/2 x 1
F	Cab roof	3/8 x 3-1/2 x 3-1/4
G	Cab roof vent	1/8 x 3/4 x 2-3/4
H	Axle holder	1/2 x 2 x 2-1/2
J	Axle spacer	1/4 x 1-1/4 x 1-1/2
K	Cowcatcher	1-1/2 x 2 x 3-1/2
L	Cowcatcher crossbar	1/2 x 1/2 x 2-3/4
M	Front boiler support	3/4 x 1 x 3
N	Rear boiler support	1 x 1-1/4 x 2
P	Head lamp case	3/4 x 1 x 1-1/4
Q	Head lamp base	1/8 x 1 x 1
R	Head lamp	3/4 dia. x 3/8
S	Sicam dome	3/4 dia. x 1-3/4
T	Sand dome	3/4 dia. x 1-1/2
U	Pistons (2)	1/2 dia. x 1-1/2
V	Drive wheels (4)	3/8 x 2-3/8 dia.
W	Front wheels (4)	3/8 x 1-1/4 dia.
X	Axles (4)	1/4 dia. x 2-7/8
Y	Dowel pins (2)	1/4 dia. x 1-1/2
Z	Dowel pin	1/4 dia. x 2-5/8

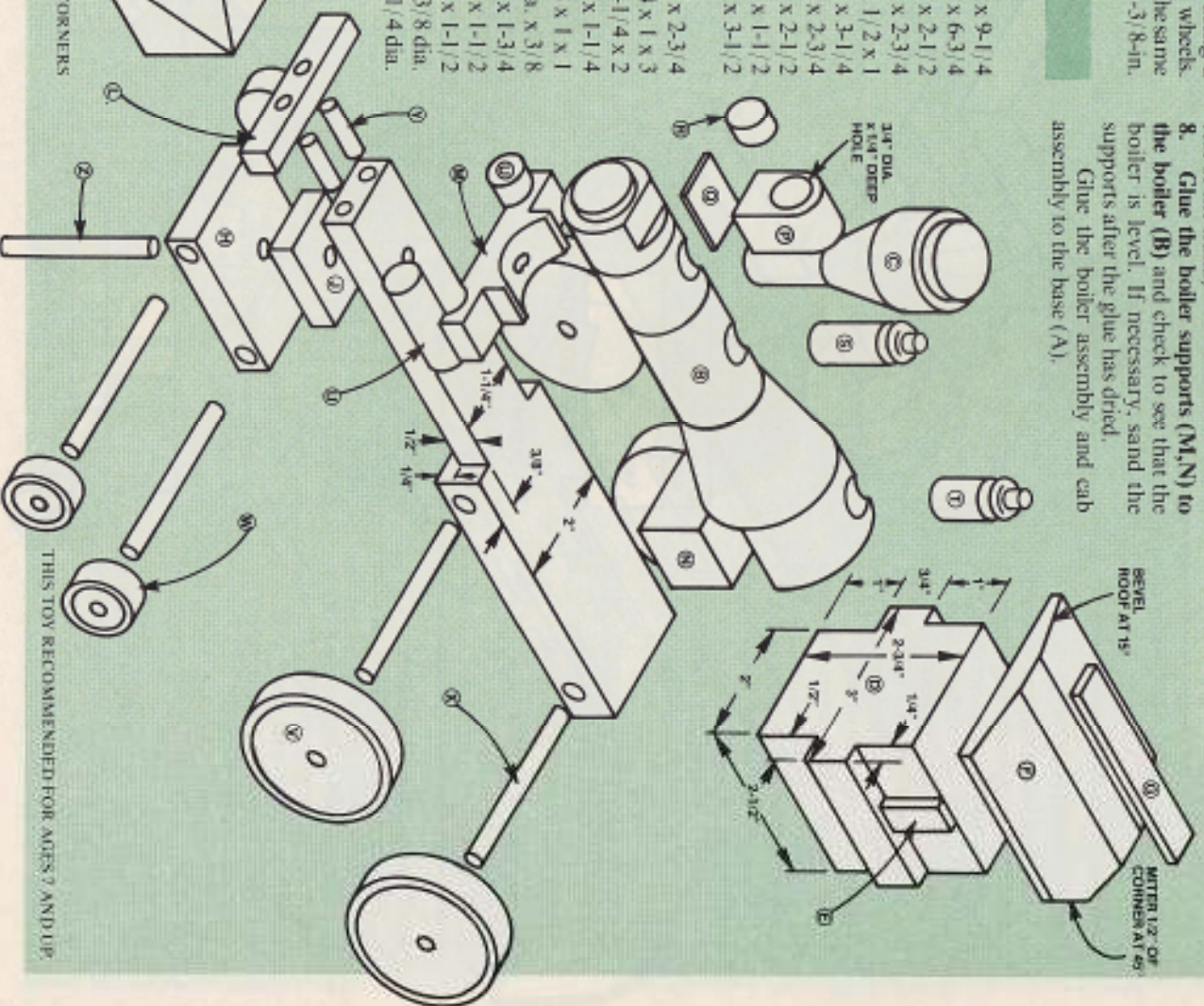
dia. hole saws. (While you're at it, make enough of these smaller wheels for the rest of the train.)

8. **Glue the boiler supports (M,N) to the boiler (B)** and check to see that the boiler is level. If necessary, sand the supports after the glue has dried.

Glue the boiler assembly and cab assembly to the base (A).

9. **Drill the required holes** for the various round parts — steam and sand domes, smokestack, axles, and head lamp. At this time, two dowel holes must be drilled for mounting the cowcatcher assembly to the base (A).

10. **Assembly.** Glue the cowcatcher assembly into place with 1/4-in. dowel pins (Y). Next glue the axle spacer (J) and axle holder (H) into place. Glue the smokestack (C), domes (S,T), and head lamp parts (P,Q,R) into place. Drill a 1/4-in. hole through the engine and into the smokestack for a dowel rod (Z) reinforcement. Glue the pistons (U) onto the front boiler support then attach the wheels.



(ROUND OFF ALL SHARP CORNERS ON COWCATCHER)