

■ JUNIOR'S EARTH-MOVING and road-building programs will be greatly extended with this toy power shovel. Comfortably seated on the cab, he pushes himself about and can swivel in any direction. One control lever operates the boom, another the shovel position, while a push rod opens and closes the shovel. There's also a winch to use as a "stump puller," and the cab opens to store valuables.

Dummy traction treads are mounted on two pairs of holders, each pair fitted with spacers. The four pieces having rounded ends are stacked and clamped together so axle holes can be drilled in alignment. Two of these pieces are assembled to a T-shaped crosspiece with waterproof glue and screws. Then the spacers are glued and nailed on and the two outside pieces are attached similarly.

The cleated treads are made from two strips of  $\frac{3}{8}$ -in. white pine. Saw kerfs  $\frac{5}{16}$  in. deep, and spaced  $\frac{3}{4}$  in., are cut across them. The strips are soaked with water at points where they are to be bent over the rounded ends of the tread holders. The treads are cut out to fit around the ends of the chassis crosspiece, and are attached with waterproof glue and brads, two brads to each cleat. Treads project  $\frac{1}{4}$  in. beyond the outer tread holders.

Ends of the axles come almost flush with the outer surface of the tread holders. Axles are drilled for cotter pins, then slipped through one tread holder, wheels and washers added, then slipped through the other tread holder, after which the cotter pins are installed. Use 5-in. rubber-tired wheels which will project  $\frac{5}{8}$  in. below the tread holders.

Dummy drive and bearing wheels for treads can be made of cardboard (Bristol board) as shown in the lower right detail on page 2342. They are glued and bradded in place, later painted and then coated with spar varnish to seal out moisture. The bearing wheels also can

## Little digger for junior engineers

BY RON ANDERSON

Junior construction engineers can ride this toy power shovel that operates realistically by using hand controls



be cut from tin cans or from polyethylene-plastic food containers. Wooden side plates, projecting over the drive wheels and fitting between the bearing wheels, are nailed on.

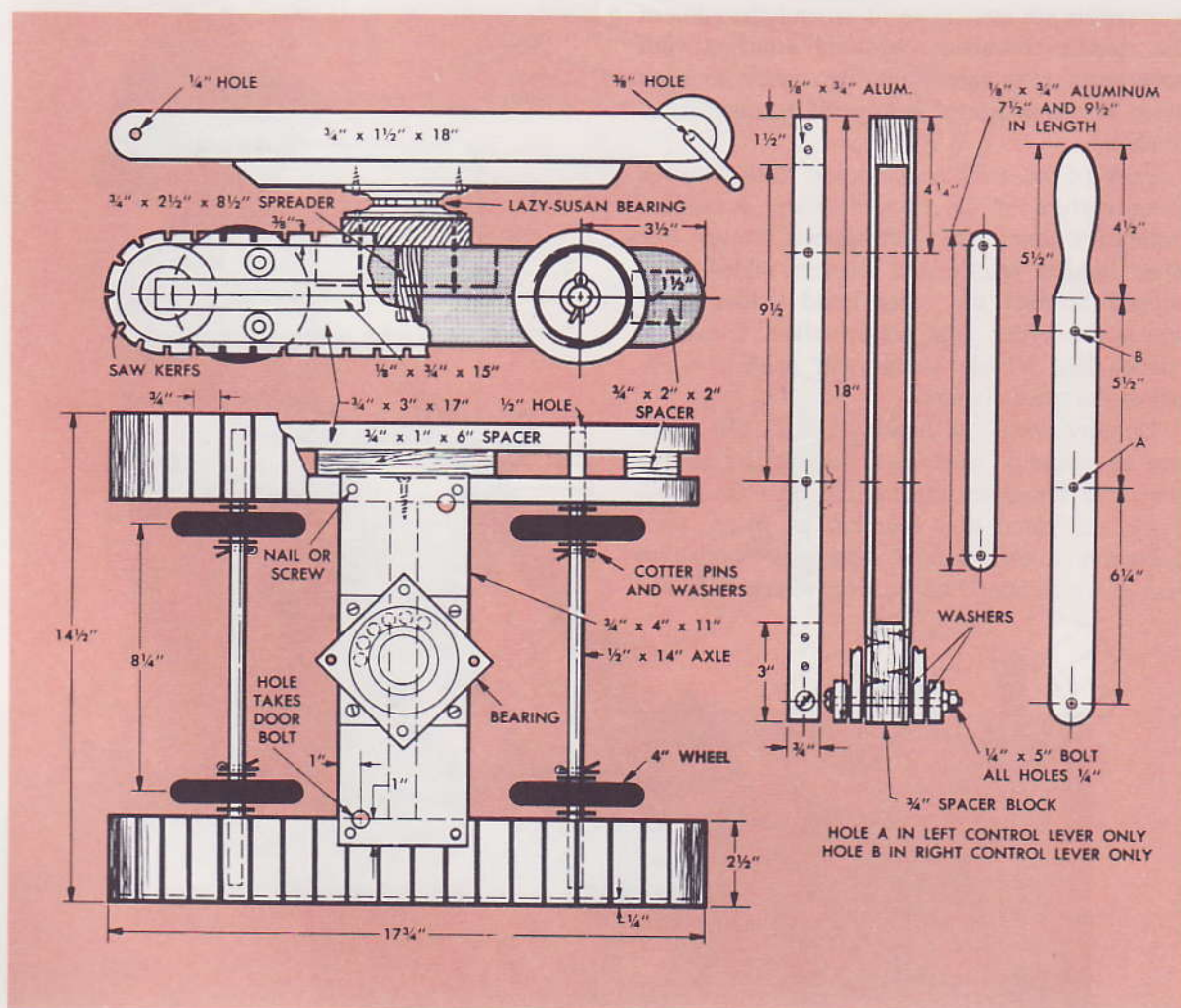
A 4-in. standard lazy-susan bearing is screwed to the chassis crosspiece. Later, after cab assembly, the upper plate of the bearing is screwed to the cab bottom, it being possible to drive the screws when the top plate is turned 45 deg. as shown in lower left detail on this page. If you can't get such a bearing, just use two 3-in. metal disks drilled centrally and greased to reduce friction, assembling these on a bolt with large washers under head and nut.

The shovel arm, its two sides, and the control levers are made of  $\frac{3}{4}$ -in. wood, while the back, bottom and front are  $\frac{1}{4}$ -in. stock. A 1-in. angle bracket, twisted at one end, forms the mending plate on the hinge and connects to a push rod which opens and closes the bottom of the shovel.

The push rod passes through a screw eye which is turned down far enough to provide friction on the rod and prevents the shovel from opening by itself. A ball knob is drilled to fit on the end of the push rod and is pinned to it. Control levers and boom pivot on a bolt that passes through the boom mount, washers being used between the parts.

The boom mount is drilled at both ends and is fastened to the cab bottom with screws, no glue being used. Front and back have two slots that fit over the boom mount. After assembling the cab it is set over the boom mount and on the bottom. Wood screws then are driven through the bottom into the sides. An ordinary door bolt on the cab side locks it to the chassis crosspiece. A screw hook on the cab front engages a screw eye on the boom-control lever to hold the shovel up when it is in traveling position.

The winch is installed on the rear end of the



boom mount. There should be enough clearance between the winch drum and the boom mount so the drum can move endwise permitting a bolt at the end of the crank to slide between two pins on the boom mount to lock the winch. Nylon cord is fastened to the drum and is provided with an S-hook made of No. 11-ga. wire, for easy attachment to objects to be pulled. When not in use the cord is wound up on the drum and the S-hook is clipped in a screw eye on the cab.

It is advisable to partly disassemble the unit for painting. The chassis is flat black; the treads and dummy wheels are aluminum and the side plates red. The cab is red as are the handles of the control levers. The rest of the levers are black, as are the doors, windows, boom mount and the ventilating grille, which is cut from ordinary screen and tacked in place.

**See also:** cannons, toy; duplicator; games, children's; machine gun, toy; magic; toys.

