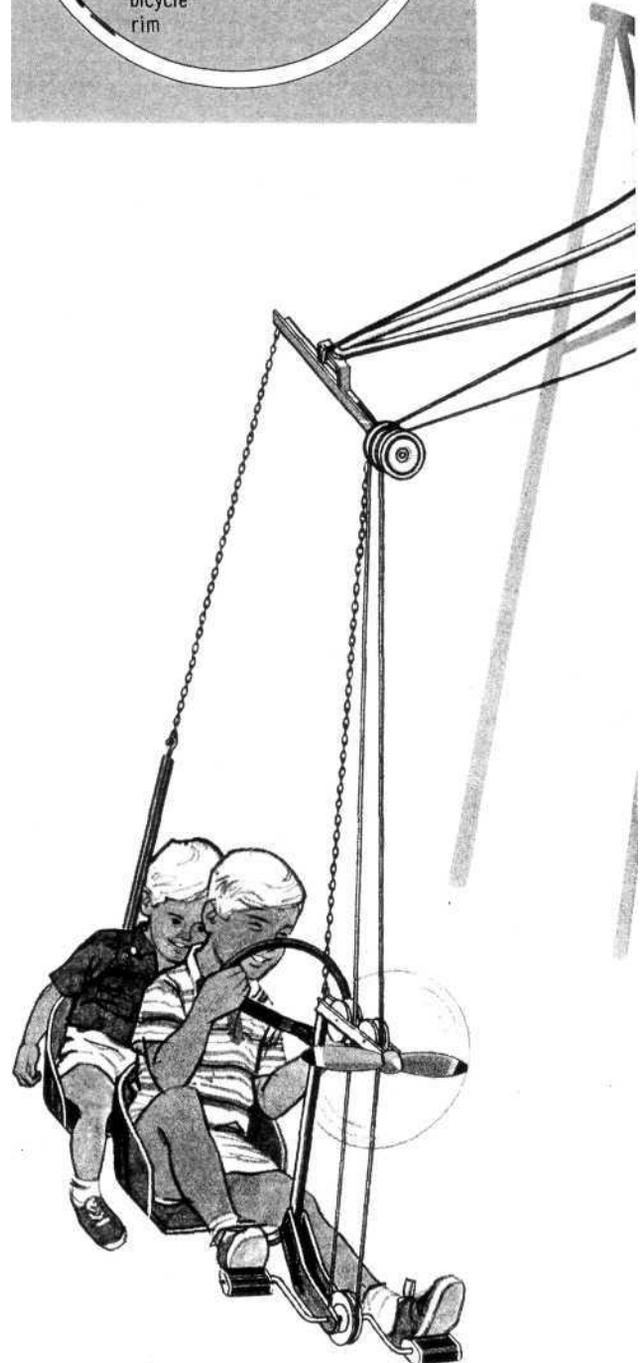


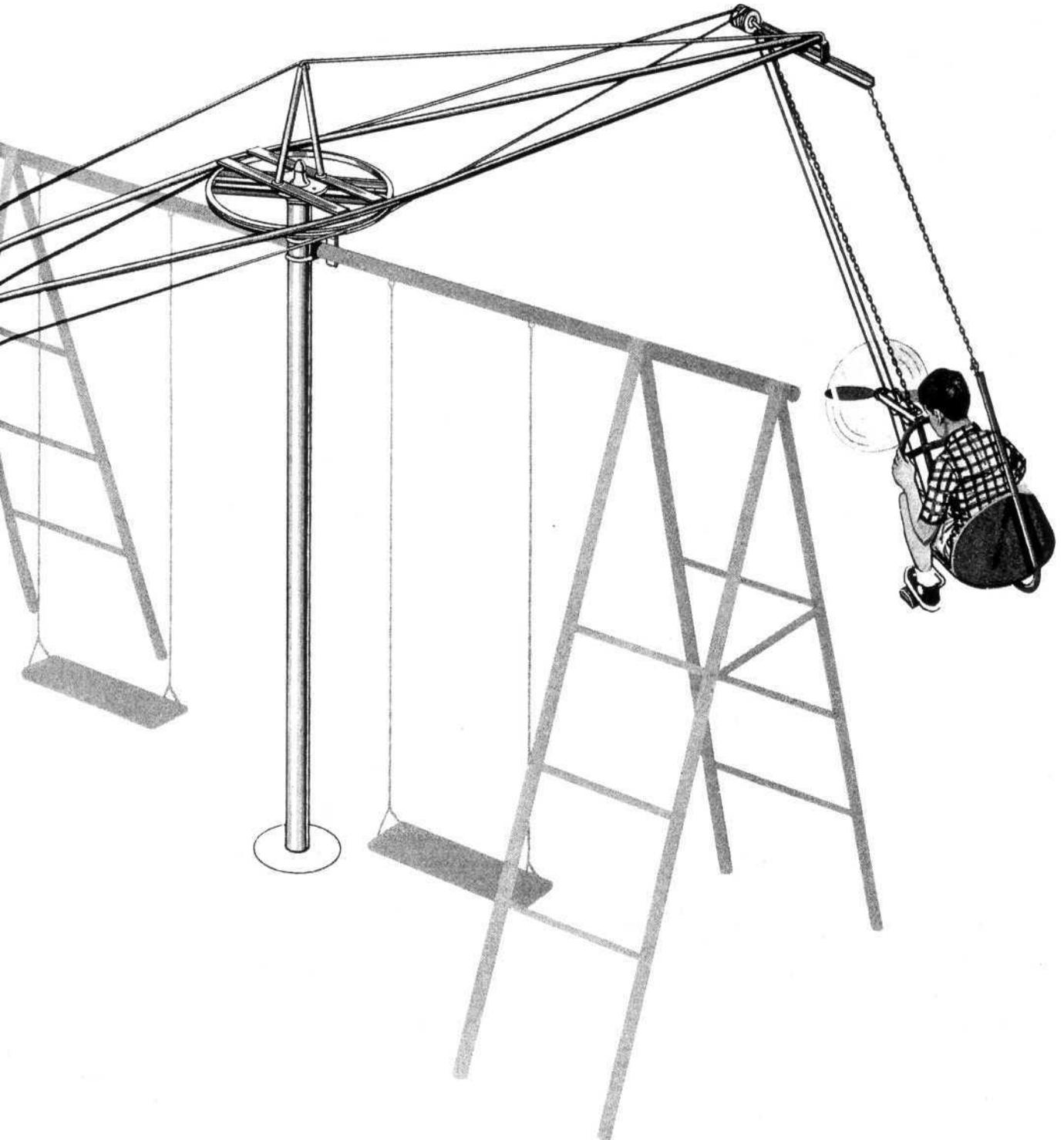
This go-round puts kids in orbit

By DAVID A. GATTIS

You DON'T NEED NASA to put your kids in orbit. They'll really get a blast out of this attachment that adds whiz-around variety to the back-and-forth motion of a set of swings. If your back yard is already graced with a sturdy swingset, you can add the whole pedal-plane unit at a cost of about \$14 for materials. The only power tools you'll need: an electric drill and an arc welder. Don't own the latter? Then you can prepare all



If you have a backyard swing set, you can add this flyer to it
and give it all the thrills of a big-time amusement park.
No swing set? Then hang it from its own freestanding pole.
Either way, you'll be the hero of the local merry-go-round set



Hook for handing optional seat

8'10"*

7/16" cold-rolled steel rod

Weld
1/2" pipe flattened at center and bent into V

18"

1/4" x 2" x 10" steel plate

Front wheel auto hub

1/2" steel pipe

6 1/4"
Weld hub flange and V-brace to plates, plate to pipes

7'*

* Measurements may vary with size of swingset

18" min.

3'

Treated 2 x 4 bolted to pipe, and set in earth

Holes for 1/4" bolts

28" rim

Front wheel auto knuckle

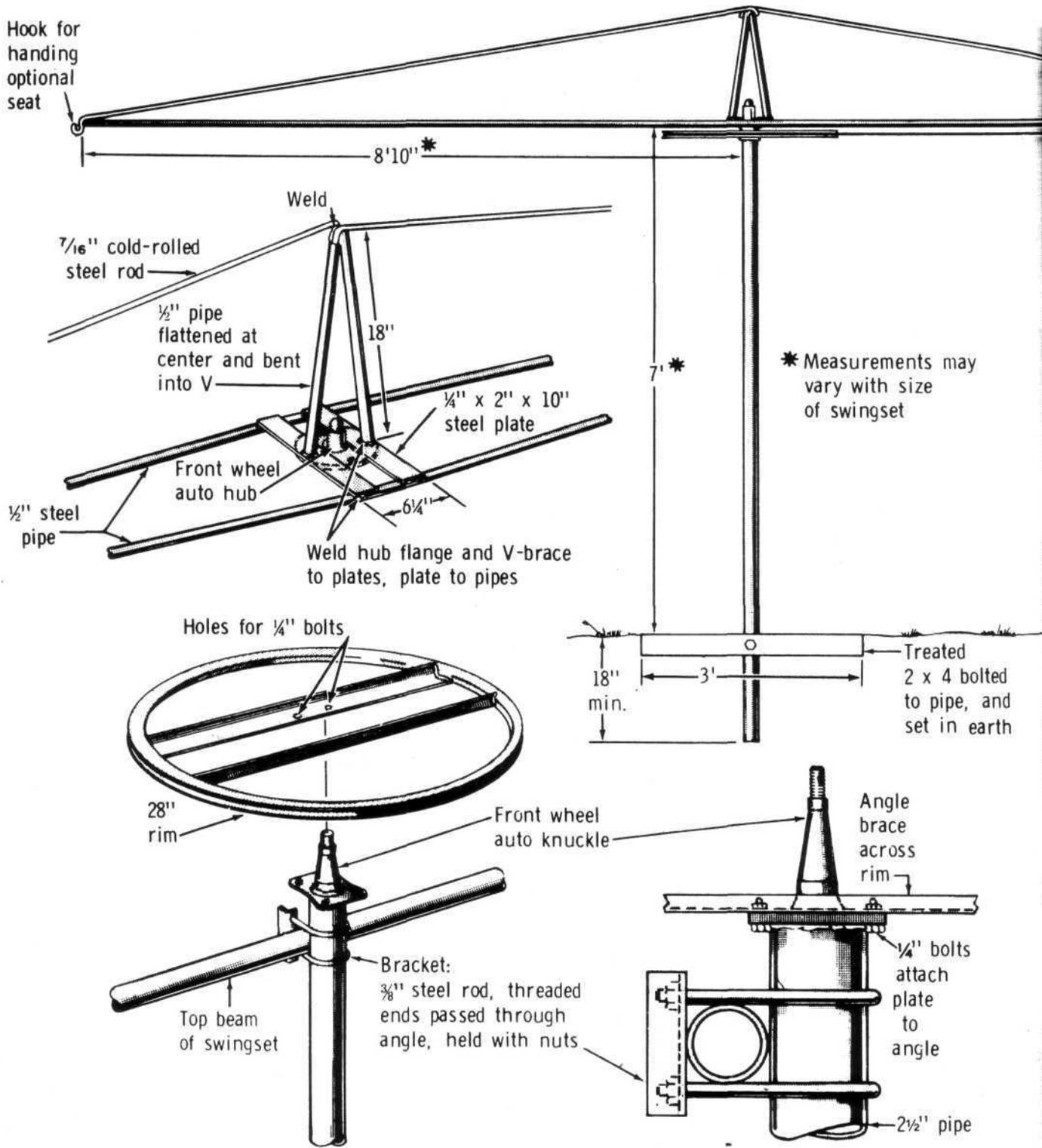
Angle brace across rim

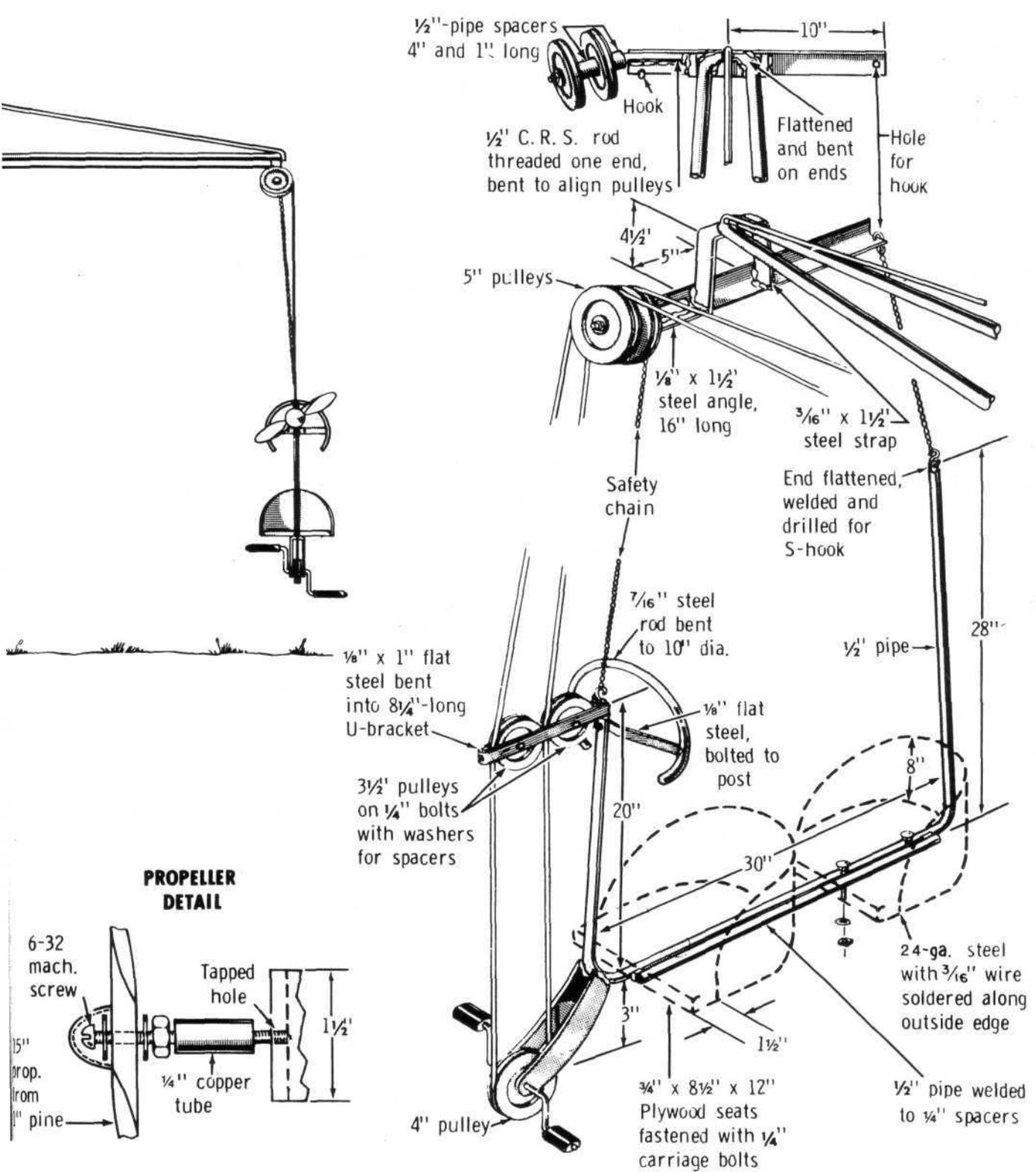
Top beam of swingset

Bracket: 3/8" steel rod, threaded ends passed through angle, held with nuts

1/4" bolts attach plate to angle

2 1/2" pipe





1/2"-pipe spacers
4" and 1" long

10"

Hook

1/2" C. R. S. rod
threaded one end,
bent to align pulleys

Flattened
and bent
on ends

Hole
for hook

5" pulleys

4 1/2"

5"

1/8" x 1 1/2"
steel angle,
16" long

3/16" x 1 1/2"
steel strap

Safety
chain

End flattened,
welded and
drilled for
S-hook

7/16" steel
rod bent
to 10" dia.

1/2" pipe

28"

1/8" x 1" flat
steel bent
into 8 1/4"-long
U-bracket

1/8" flat
steel,
bolted to
post

3 1/2" pulleys
on 1/4" bolts
with washers
for spacers

20"

30"

8"

24-ga. steel
with 3/16" wire
soldered along
outside edge

3/4" x 8 1/2" x 12"
Plywood seats
fastened with 1/4"
carriage bolts

1/2" pipe welded
to 1/4" spacers

4" pulley

**PROPELLER
DETAIL**

6-32
mach.
screw

Tapped
hole

1/4" copper
tube

1 1/2"

15"
prop.
from
1" pine

pieces for assembly and take them to a welding shop. If you *don't* have a swingset now, you can erect the pedal-plane as a separate unit, taking a bit more care with the "planting" of the pivot pole, and adding prop-type supports.

Roller and ball bearings eliminate virtually all drag, making the rotating mechanism surprisingly easy to operate. A three-year-old can "solo" at speeds up to 15 mph (circular miles) at an altitude of from 1 to 4 ft. The unit is designed for youngsters under 120 lbs., but additional supports could be added to adapt it for larger children. The truss and center post have been tested at over 200 lbs., but with this weight applied, only the most rugged swingset frames will provide necessary bracing.

In the sketch on page 1693, we show a two-seater unit, for small youngsters, balanced by a single-seater for older kids. In this arrangement, you've got a double pedal action, with both drive belts bearing on the same bicycle rim. But as the sketch on page 1694 indicates, a single pedal-plane unit will spin the structure nicely, and you can provide balance by hanging a baby swing, basket, hobby horse or what have you from the other end of the beam. Surprisingly, the extra weight is hardly noticed by the pedaler.

front seat provides tension

The front of the seat unit actually hangs on the endless belt—its weight is what gives this drive loop enough tension against the pivoted bicycle rim to send the whole unit spinning. The belt (1/4-in. manila rope for economy) passes around the pedal pulley, up through guide pulleys behind the wind-spun prop, up past pulleys on the end of the support beam and across to the central rim. The front chain is merely a safety factor, since the drive belt is subject to wear and could, in time, break; a small spring between a few top links keeps this chain taut in normal use. The rear chain is, of course, what holds the back of the plane up. It attaches about 2 ft. above the center of gravity, for stabilization.

The belt is made by untwisting 12 in. of rope at one end and weaving the strands back through an untwisted portion of the other end. Trim off the loose ends and you've a splice that can't pull apart. To eliminate belt slippage, rubber electrical tape (or a strip of old inner-tube) is wrapped around the bicycle rim and a vacuum-cleaner belt is snapped over the drive pulley.

The plane unit itself is of the simplest possible

construction. The seat frame is a double bend of 1/2-in. water pipe; the size indicated is adequate for two seats for children 2 to 5 yrs. old, and the seat positions are adjustable.

The fork of an old tricycle provides the drive mechanism. Remove the wheel, but leave the 1/2-in. shaft at the center. With the crank used, a 5/8-in. hole in the pulley just clears the elbows. After positioning the pulley shim the shaft with sheet-metal strips and, to eliminate slippage, drill the shaft to provide a seat for a setscrew. If no tricycle fork is available, suspend a bicycle crank between two hangers of steel plate, welded to the frame's front bend.

make plywood pulleys

Guide pulleys are made from 3/4-in. waterproof plywood, with an old auto generator ball bearing epoxied in the center. Not owning a lathe, you can turn pulleys on a portable drill. Just insert a bolt through the center of each rough disk and chuck it in the drill, which is secured in an upright bracket. Then, with a round file, cut the edge groove about 3/8-in. wide and 1/2-in. deep. The bearing holes are cut with a circle cutter set for a diameter slightly less than that of the bearing. Degrease the outside of the bearing before applying epoxy and drive it into the hole; before the cement sets, align the bearing so the pulley will spin without wobble.

The support post is 2-1/2-in. steel water pipe—the length determined by the height of your swingset's top beam. Two U-bolts clamp the pipes together, and a length of 2 x 4 is bolted across the post's lower end to keep the pipe from sinking. Or you could provide a concrete footing.

The hub and knuckle (spindle) were from an old Dodge front end; however, almost any type (except a ball joint) could be substituted. All parts attached to the hub and knuckle should be arc-welded to minimize heat distortion. You may have to modify the pipe to insert the knuckle shank. The knuckle-pipe weld should be as strong as possible.

The main beams are two lengths of 1/2-in. pipe flattened on each end. These ends are bent and welded together after you weld the beams to the hub plates.

If you want to add up-and-down motion, you could tilt the center pole or bolt the bicycle rim off center.