

free from cracks; they will stand up in any kind of lumber and come ahead on the wheels. They never get rolled unless something happens to them. They have both been twisted, and neither has been rolled since the twist was reduced. Furthermore, I don't expect to roll them until they get twisted or dished again. Now, I ask any fair-minded man, what is the use of rolling them? Also, I shall have to ask some one to explain why it is necessary to put a saw on the bench every time it comes off the wheels. I have some other saws. I had one all rolled into a coil. We were sawing a stick of fat Georgia pine, there was a dodge and a squeal; then all was still as far as the resaw was concerned. This happened about ten minutes before shutting-down time, and as I realized that it was a case of twist, I left the strain on all night, hoping perhaps to help it a little. When I took it off it seemed alive until it got where it wanted to go, which was wrong side out. It took three of us to get it back on the bench where I could work on it. I fixed it and made two runs, when it twisted once more, slightly. Since then it has been doing finely, till the other day it cut off an 8-inch wire spike, striking at an angle of about 45 degrees. A dozen teeth were torn away, and I have ground a new set in. There are no cracks in it yet, and I hope to saw a lot of lumber with it, though it is but  $4\frac{1}{2}$ -inches wide.

#### SMALL SAW-SET FOR CIRCULAR SAWS.

The following describes a home-made saw-set for swaging small circular saws. It is very simple, quickly made,

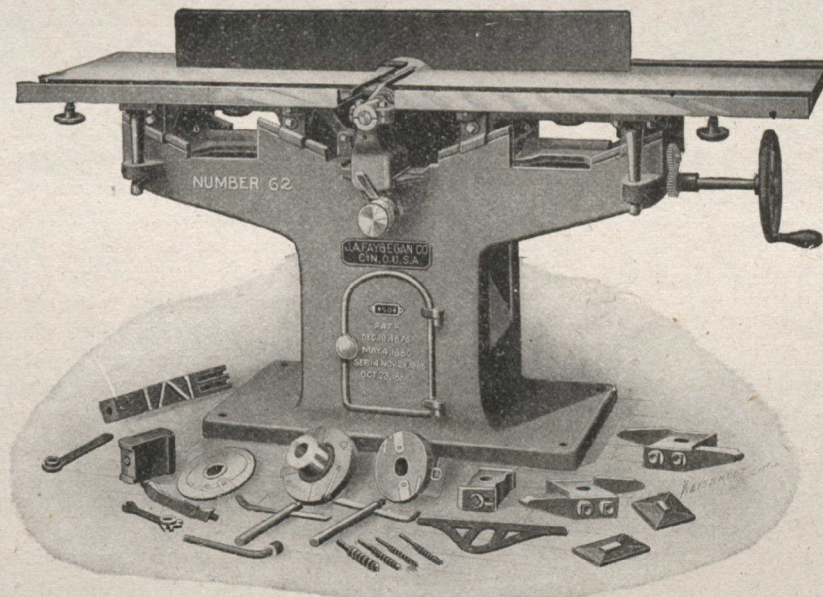
and costs nothing to make. Take a 5-inch shaft collar and make a bevel one inch long, on one edge, this bevel a little stronger than the set is to be. Place the tooth over the bevel as far as desired, and, using a light machine or claw hammer, strike a firm blow. It depends on the weight of hammer how hard a blow should be given. This set will not be a spring set, but what some call a "knock set," and lasts longer than a spring set.

Speaking of swage on small circulars, will say I changed about a dozen spring-set saws over to swage saws, and ran them for four or five weeks just to see if they would do any work. Some of the sawyers (box) were complaining that the set didn't hold. I knew they had cause to complain, for they were ripping spruce, and often wet at that. It was no little task, using an upset on about 420 teeth, then grinding them to a good pitch. Saws averaged 12 inches, 14 and 15-gauge and 1-inch spacing. They cut true, but at the end of one month the sawyers complained of getting tired sooner than usual, as they had to push harder. When a nail spoiled the set, it had to be all gone over again. It caused the sawdust to fly around considerably more than the other set, so I changed them gradually back to a "knock-set"—a cross between a spring set and a swage. They ran well after that and caused no complaints. I allowed about 1-16-inch on each tooth and gave a liberal hook. If no large collar is handy, take an old gear or pulley, or anything heavy enough, so long as it has a flat surface large enough to hold the saw on. Change bevel when it gets worn.

#### A UNIVERSAL WOODWORKER.

The machine shown herewith is manufactured by the well-known firm, J. A. Fay & Egan Co., of 153-173 West Front Street, Cincinnati, Ohio, and is a most valuable kind of tool for any kind of wood-working shop, as it will do a

joints, square up bed-posts, table legs, newels, raise panels, either square, bevel or ogee, stick beads, work circular mouldings, etc., etc., rip, cross-cut, tenon, work edge moulding, etc.



No. 62 "Universal" Woodworker.

variety of work that usually requires several different machines, and at the same time it does the work much better, quicker and cheaper than it can be done by hand.

So great is the variety of work that it is entitled to the name "Universal." It will plane, out of wind, surface straight or tapering, rabbet door frames, rabbet and face inside blinds, joint, bevel, gain, chamfer, plow, make glue

The tables are of iron and each can be adjusted independently, vertically and longitudinally in relation to each other or simultaneously together to and from the path of the cutters.

For further information regarding this tool the readers are requested to write the manufacturers, who will be pleased to give full information by return mail.