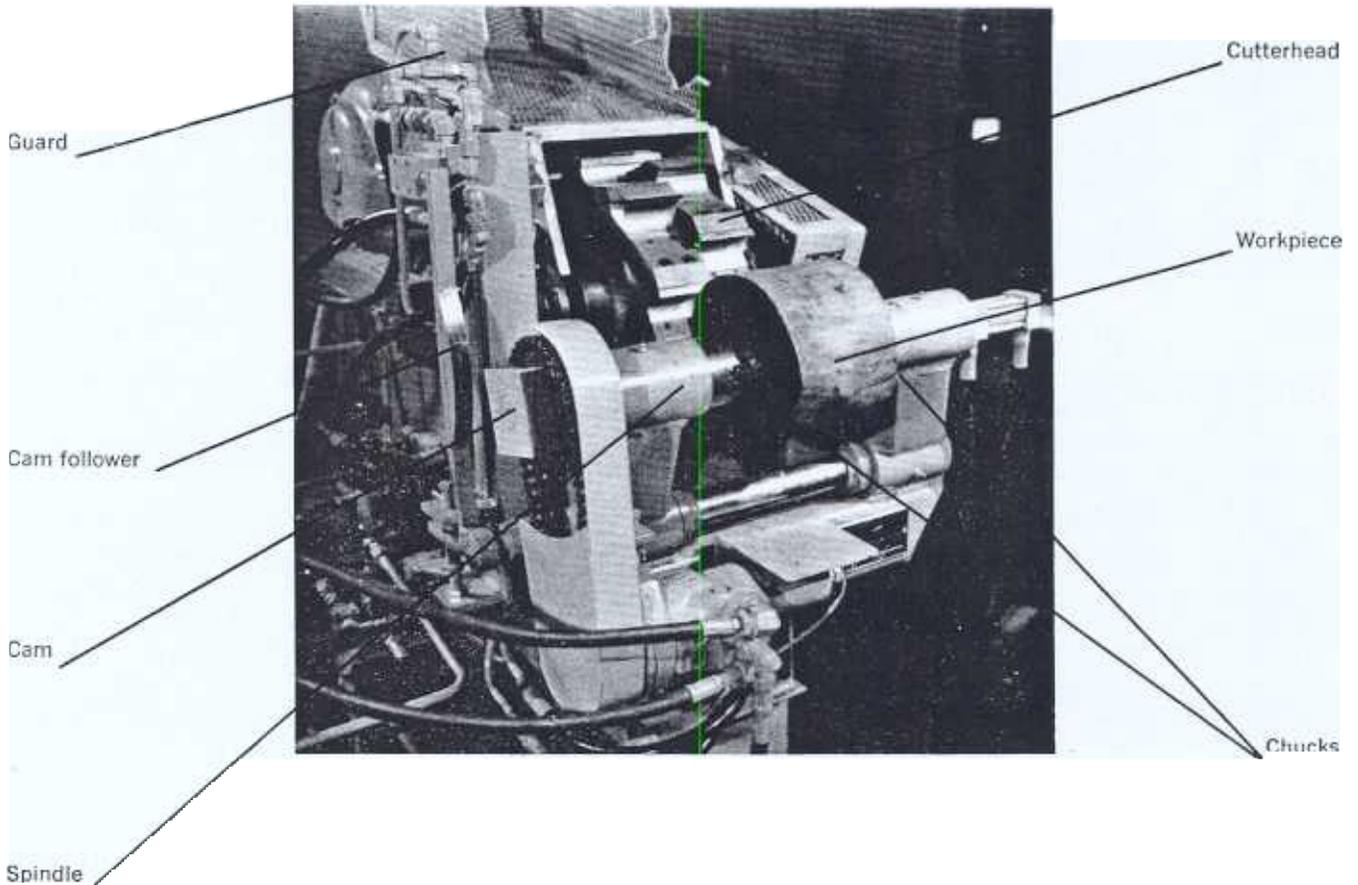


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hardwood flakes for
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Lathe creates hardwood flakes for manufacture of “super strong” flakeboard



MOST INDUSTRY MEMBERS got their first look at a prototype of the Koch lathe at this year's Southern Forest Products Assn. Machinery Exhibition held in Atlanta. With the residue from this machine, Dr. Peter Koch, project leader at the Southern Forest Experiment Station in Pineville, LA thinks it will be possible to create a flake that can be used for making a structural exterior flakeboard to compete in price and function with sheathing grades of plywood.

Approaching commercialization

The commercial version of the Koch lathe will look just like the prototype, but the cutterhead, instead of being 7 in. long, will be 54 in. long. The cutterhead will have an 18 in. diameter and be equipped with 10 knives. It will rotate at a speed of 1800 r.p.m.

The machine's workpiece is grasped by two chucks. A hydraulic mechanism on the side of the machine drives the chuck so the workpiece revolves slowly at 15 r.p.m.

Attached to the workpiece spindle is a replaceable cam that regulates the dimensions of the finished workpiece. "Suppose the cam is square," says Koch, "that square cam moves and rotates with the workpiece until it comes up and strikes a cam follower aligned with the cutterhead. What happens is the workpiece spindle and the cutterhead spindle change center distance as the workpiece rotates. The resulting workpiece will be square because the lathe will precisely duplicate the contour and dimensions of the cam."

The machine operation requires only four seconds, the time it takes the workpiece to make one 360-deg. revolution. During the cutting, flakes, 3 in. long and 15/1,000 in. thick, fly out a 54 in. wide spout in the back of the machine.

Koch says the machine will produce 12,500 bd. ft. of cants plus 30 tons of green flakes per eight hours. The machine also works well on certain types of softwood, but Koch says right now he is specifically aiming at the 22 species of southern hardwood.

A major contributor to the development of the chipping headrig, Koch feels the lathe has a number of important advantages over the headrig.

"Chipping headrigs are designed to make pulp chips and cants out of soft-

"This revolutionary board is going to change the procurement patterns in the South over the next decade the way the chipping headrig changed the situation over the last ten years."

Dr. Peter Koch, Forest Service



wood. Because pulp chips are 3/4 in. long, the knife hits the surface every 3/4 in. This gives the workpiece a pretty rough surface. On the lathe the knives strike the hardwood every 15/1,000 of an inch. Therefore, we don't get any grain tear whatsoever.

"The headrig has never worked well with hardwoods because hardwoods are generally crooked. With this new machine, the crooked hardwood is gripped on both ends, so the crooks don't make any difference.

"The kicker, though, is that the residue from the lathe is not a pulp chip but an engineered flake that can be used to make a super-strong structural exterior flakeboard. We're getting it as a residue, whereas other people have to flake up whole logs, which is an expensive proposition."

Ten year dormancy

Koch first demonstrated his lathe in 1963. He tried to interest a company in Illinois in manufacturing it for commercial use, but they weren't interested.

Ten years passed, and when the price of plywood reached an unbelievably high level, the government put pressure on the Forest Service to devise a method for making better use of the wood left on the land.

Koch realized there was an abundance of junk hardwood in the southern forests, and he had a hunch he might be able to put it to good use.

"On southern pine land," says Koch, "for every cubic foot of southern pine, we have something approaching a cubic foot of hardwoods. I'm talking about the off-site hardwoods that are growing on land best suited to southern pine. Whether it's a cu. ft. or 1/2 a cu. ft. of hardwood per cu. ft. of pine, I don't know, but it's somewhere in between. These trees are very small, maybe 6 in. in diameter, breast height, and they're 40 or 50 years old.

"We don't want to continue to poison these trees the way they're now poisoned, chained, ground, chopped up, injected, or what have you.

"Our purpose is to economically use this wood, and at the same time, cut down the cost of site preparation for the pine plantation."

After a lengthy period of research, Koch recommended the government sponsor a program to determine whether his lathe could convert the junk hardwood into cants for making pallets and flakes that could be converted into structural exterior flakeboard. He then went about placing a development contract with Stetson-Ross to further develop the machine he'd first demonstrated 10 years before.

As a result of several design conferences, Koch and engineers from Stetson-Ross came up with the prototype exhibited in Atlanta. According to Chandler Jones, general sales manager, Stetson-Ross, the shipping date for the first commercial model is July 1, 1974. The first model will belong to the government.

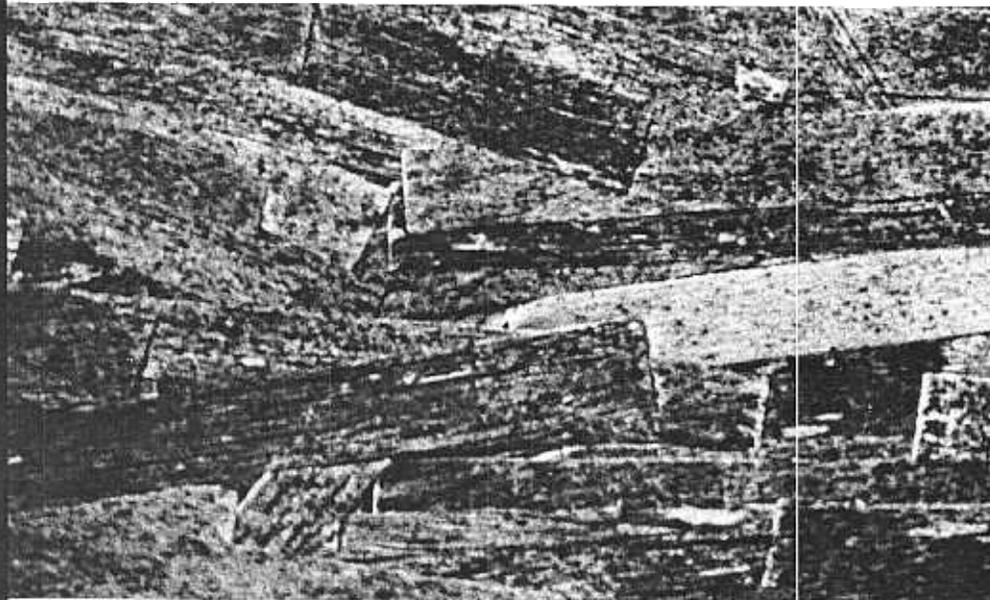
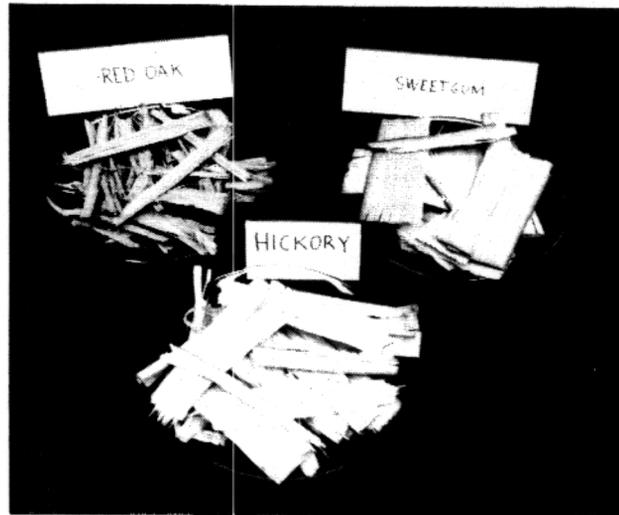
New flakeboard industry?

In addition to offering a partial solution to the lumber resources problem, Koch believes his machine will eventually give rise to a new flakeboard industry.

"This revolutionary board is going to change the procurement patterns in the South over the next decade the way the chipping headrig changed the situation over the last 10 years," Koch predicts.

"By 1980, there will be many plants making this board. Since 1963, we've built 53 plywood plants in the South. It wouldn't surprise me a bit if, by 1980, we built half this capacity in flakeboard plants. The stumpage is cheap, the flakes are priced as residues, we have plenty of hardwood, and I'm confident the flakeboard will compete."

"On southern pine land, for every cubic foot of southern pine, we have something approaching a cubic foot of hardwoods."



*Left: structural exterior flakeboard with these specifications: 50% oak, 25% hickory, 25% sweetgum; face and back oriented, core random; IB: 85; MOE: 1,000,000 p.s.i.; MOR: 8,000 p.s.i.; 5% phenolic resin; pressed at 325 deg. F for 6 min.
Above: By-product of the Koch lathe are flakes 3 in. long and 15/1,000 in. thick.
Below: Koch's machine produces cunts with the same contour and dimensions as the cam. On the commercial model the cutterhead will be 54 in. long and have an 18 in. diameter.*

