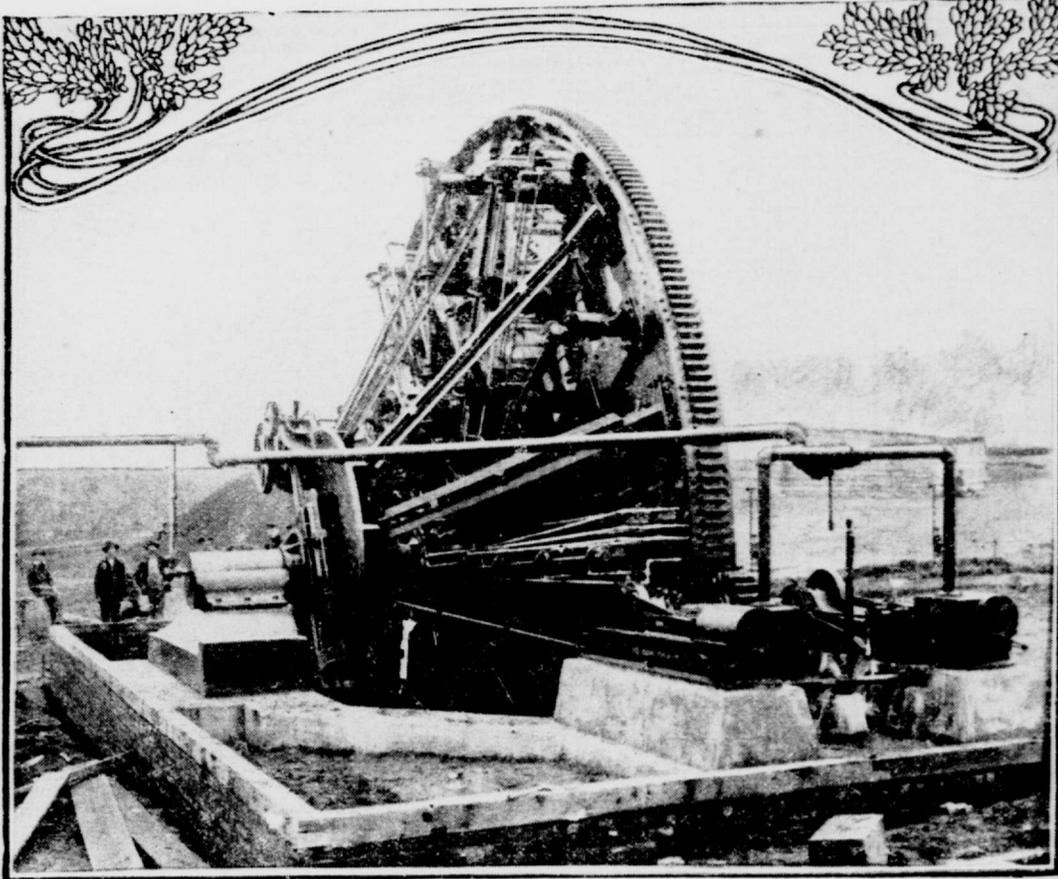


A FEW OF THE RELENTLESS AND VORACIOUS MACHINES WHICH ARE DEVOURING THE NOBLE FOREST



A HUGE VENEERING MACHINE ERECTED IN THE FOREST IN THE OPEN AIR. It makes a pretence at economy by peeling off the wood in strips only one-thirty-second of an inch thick, but it daily uses up 100,000 feet of logs.  
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HANDLES FOR TOOLS, CHAIR RUNGS, ETC., USE UP AN AMAZING LOT OF WOOD. They are turned out on lathes than can finish about 75,000 in ten hours.

ACRES FOR MATCHES.

Ten Thousand Annually Stripped of Wood for Excelsior.

Timber eating machines, big and small, that slice and grind and carve and rip—a battery of whirring and screeching monsters incessantly at work in every state of the Union—account for a constant depletion of forests estimated at forty-five square miles every day in the year. They are hungry, these machines; they have an appetite for timber, and many of the most eager feed themselves without human aid. And not always the biggest and noisest eat the most. There are little, ratlike machines, banded together, that nibble and gnaw so swiftly that their teeth clean up the equivalent of acres of forest in a day. These just supply the nation with a trifle like excelsior, perhaps, or toothpicks.

Like most other wholesale devourers, these machines waste much while they consume. The giant buzzsaw, humming and roaring its way through huge logs in a Western forest, spills one-fourth of its meal in practically useless sawdust that must be burned at extra cost. One-third of all the trees felled goes to the waste dump as slabs, cores and corners. The smaller machines eat more closely, but make it up on a finicky palate. They disdain to touch the leavings of another and demand their own peculiar forest menu.

A pretence at economy is made by such an apparatus as the veneer machine, which peels off strips of wood only one-thirty-second of an inch thick, but one day's peeling uses up one hundred thousand feet of lumber. The bulk of a metropolitan Sunday newspaper is fairly well appreciated, yet few would guess that fifteen acres of spruce trees are contained in the news sheets and supplements of a one day's issue.

Some of these timber eaters move about the country hungrily, like beasts of prey who have exhausted the means of subsistence in one territory and roam abroad in search of a fresh field. The portable sawmill is of this description. Even with its omnivorous appetite for anything that resembles lumber the food supply inevitably runs short, sooner or later, and it must go ten miles or fifty miles further on for a new pasture.

A toothpick factory, not content with anything except white birch, must often pick up its belongings and travel. Some years later it may return to the old hunting ground, which has become stocked with a fresh growth of birch.

In the great forests of the Northwest steel cables, drawn by 100-horsepower engines, drag logs to a skidway, whence they descend to the mills by gravity on a chute, are floated down in a miniature artificial river, loaded on cars by derricks or merely hauled along the ties of a temporary railroad by powerful locomotives.

At the mill the waste of the wide toothed circular saw, which must needs be heavy and thick to withstand stressful labor unsupported, is lessened by the use of the thinner, steel band saw. One of these, a toothed and endless strip of steel 14 inches wide and 61 feet long, whirls between its 10-foot supporting wheels at a speed of nearly two miles a minute. There are also gangsaws, several abreast, that travel through a log at express train speed, slicing out all the boards that it contains at one operation.

Portland, Ore., which manufactures more lumber than any other city in the world, has a daily output of two million feet from its eleven sawmills. There are so many hungry machines waiting for this product that the old-fashioned method of seasoning out of door for a year or two will not answer; so the lumber is hustled into a kiln and seasoned by steam or hot air in four days.

The planing machines of the Pacific Coast consume vast quantities of raw lumber for ceilings and floors, mouldings and sidings. They travel at a gait of sixty feet a minute without stopping for knots, although they do screech a little.

The turning lathe in its many varieties is an incessant devourer and is responsible for more familiar objects than any other machine in the list. The legs of tables and chairs, handles of tools, brooms and golf clubs, stair banisters, curtain poles, baseball bats, bowling balls, pill and powder boxes, dice cups, oars, paddles, diabolo spools, tent poles, mailing tubes, pulleys, door knobs, chess men and countless other articles are made by the turning lathe.

The principle of most lathes is the same—a knife brought to bear on a rapidly whirling block of wood—but there are ingenious applications to produce a wide variety of articles. For example, in the automatic back knife lathe the steel cutter is waved and grooved in the exact pattern of a fancy banister post and, of course, slices the wooden blank accordingly. A separate knife must be made for each pattern, and the capacity of the machine is up to three thousand pieces a day. An intricately carved newel post that would have required days for a hand worker to produce is turned out in eight seconds.

In some lathes the object to be carved is automatically guided against revolving knives by a mechanism which has an arm following the curves and hollows of a pattern. An exact copy of the pattern may be made or a reproduction of its proportions in another size. This style of lathe is used for such irregular forms as wheel spokes and handles of axes and hammers. The knives whirl at 2,500 revolutions a minute; the machine has a capacity of 400 spokes and half as many axe handles a day.

Five thousand handles for housewives' brooms have been turned out in a day on another style of lathe, and a boy has turned 3,825 chair legs in one day on the same machine. Straight, tapered or swelled handles are made. A heavier and longer lathe is employed for flagstaves, pike poles, small masts and booms for sailing craft.

According to an expert of the firm of E. B. Estes & Sons, which has recently been called upon by the Philippines government to carve and pass opinion on a lot of unknown tropical timber, the greatest wood eater among lathes is the dowel machine. Dowels are simply round sticks used by furniture dealers for chair rungs and other purposes. The gymnasium wand is a dowel. Birch, maple, beech, ash and oak are used for these sticks, according to the need. One lathe will turn out in a ten-hour day ten thousand dowels three feet long and half an inch in diameter. This means a daily consumption of one thousand feet of lumber. A single firm, having fifty lathes in its different factories, produces one hundred million dowels a year, which represents the timber on two thousand acres of forest land.

Clothespins come next after dowels in wood consumption by lathes. A homely, casual, little



THE HUMBLE SAWHORSE. Instrumental in using up more wood in the aggregate than it gets credit for.

article that, having a head and forked legs, about fits Carlyle's definition of man, the clothespin enjoys only a short life in consequence of the many vicissitudes of straddling a line in wind and rain, getting split, lost and appropriated by the younger members of the family for a plaything. So the race of clothespins would soon be extinct were it not for the activities of a special lathe that turns them out at the rate of seventy-five thousand in ten hours.

Ten lathes will fill a carload in a day, one thousand boxes of five gross each. The total production for the country is not exactly known, but there are enough pins to hang up the clothes of every man, woman and child, and leave a good surplus to be split, lost and stolen. The clothespin lathe is a wonderful machine, though it has not yet turned out an article that cannot be borrowed by your neighbor.

Handles are next in importance to clothespins, and then spools of all sorts, ranging from those of birch, on which cheap cotton thread is wound, valued at one-fifth of a cent, to fine, large silk spools of varnished maple, worth three cents apiece, and even more expensive diabolo spools of beech. The majority of spools are made from birch wood, of which the annual consumption by one spool manufacturer alone amounts to twenty thousand cords. One spool a second is the gait of the spool machines. A recent order, which called for a million and a half of spools, would merely keep ten lathes busy for less than two months.

One hand-fed machine, in which blocks of wood are sliced by a circular saw, transforms ten cords of wood daily into forty thousand shingles, more or less. It is also capable of producing seven thousand orange box sides or fifteen thousand ends for orange boxes in the same time.

Barrel headings are another product of this

simple machine, which operates with ten-horsepower, while a barrel stave machine cuts thirty thousand staves a day out of twenty cords of elm, oak or other suitable timber. Elm is used largely in a special slat machine for making crates. In the automatic shingle machine five blocks of wood are held on a table, which revolves around a circular saw, and a slice is taken off each piece as it moves in procession. There is a gearing that draws the block nearer after each cut.

Pie plates and pianos, fruit baskets and chair seats and toothpicks are among the numerous articles that owe their origin partly or wholly to the veneer machine. The inventor of the first apparatus to peel wood in paperlike layers may have thought he was helping to conserve the forests and that he would make a little timber go a long ways, but the uses of veneer have seemed to expand with the production. The logs must be steamed or boiled in a large vat and cut while hot. In an old form of machine a log five feet long and four feet thick is whirled against a stationary knife, being drawn closer at each turn by automatic gearing. The thin, curling sheet of wood is cut into lengths by a rotary cutter; these lengths are squeezed flat and dried in a press and finally packed in hitches, so-called, of five hundred sheets each. Two men operate the machine, with girl or boy helpers to carry away the product. One large machine, at work out of doors in North Carolina, has eleven-foot knives, which peel one hundred thousand feet of timber a day. The great wheel, driven from its outer rim by gear teeth, is thirty-six feet in diameter and weighs one hundred and seventy tons. It seems a ponderous apparatus to produce sheets of wood from one-sixteenth to three-eighths of an inch in thickness.

The Japanese, however, have the secret of making veneer thinner than any manufactured