

Now commencing with the stiles, we find that they must have pine cores, with quartered oak band strip. The cores will require to be glued up in separate thicknesses to form one whole piece, which is done to lessen the danger of its working under climatic influence, which one solid piece would certainly do. The method of using pine cores glued up in pieces of $\frac{3}{8}$ or $1\frac{1}{4}$ -inch stuff, is therefore universally followed, so that the foreman will require to figure thus in his list, or, rather, to make out his list as follows :

LIST OF STUFF FOR 14 QUARTERED-OAK VENEERED
DOORS FOR MR. J. J. J. J. J.

PINK CORES. For stiles: 24 cores out of 1-inch stuff, to finish $4\frac{3}{8}$ inches wide, $1\frac{1}{2}$ inches thick.
For top rails: 12 cores, same stuff, to finish $4\frac{3}{8}$ inches wide, $1\frac{1}{2}$ inches thick.
For bottom rails: 12 cores out of $1\frac{1}{2}$ -inch stuff, to finish $1\frac{1}{2}$ inches wide, $1\frac{1}{2}$ inches thick.
For inside cross rails: 48 cores out of 1-inch stuff, to finish $4\frac{1}{2}$ inches wide, $1\frac{1}{2}$ inches thick.

FOR FRAME	Stiles: 48 pieces,	7 feet 1 x 5½ inches.
WINDOWS	Top Rails: 24 pieces,	2 " - 0 x 5½ "
OF ¾-INCH	Bottom Rails: 24 pieces,	2 " - 0 x 11½ "
QUARTERED	Inside Rails: 96 pieces,	2 " - 0 x 4½ "
OAK.	All above to finish ¾-inch less.	

FOR 48 pieces of plain oak, 11 x 23 inches of one inch stuff, to finish 3 $\frac{1}{2}$ -inch.
PANELS. 96 veneers of quartered oak, 8 $\frac{1}{2}$ x 21 $\frac{1}{2}$, of $\frac{1}{4}$ -inch veneer.

PINK 230 feet sawn pine fillets, $3 \times 1\frac{1}{4}$ inches, to go
FILLETS under moulding.

QUARTERED 290 feet 1½-inch raised moulding, ¾ inch thick,
OAK MOULDING, out of one-inch stuff.

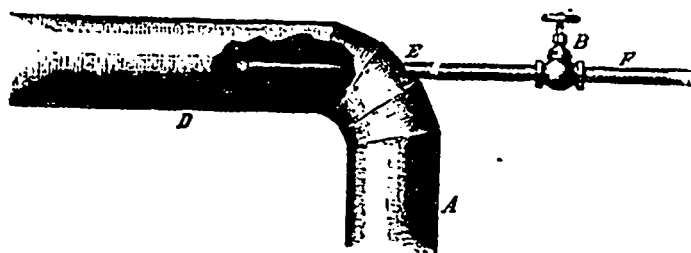
This is an approximate list of the stuff required for these doors, which, with the sketches I have enumerated, will be sufficient to enable the sawyer to cut out his stuff, and being passed from him to the planers, give them a full idea of the finished sizes. Sometimes the foreman will only give the finished sizes, relying on the sawyer to use good judgment in selecting and cutting up the stuff, but this method places a responsibility on the sawyer which many are not able to assume.

All lists should be returned for reference and kept clean.

In closing this article, I might say that it is submitted with the intention of placing before the fraternity a suggestion for this work, and I will be glad to welcome criticism, be it favorable or adverse, for the general benefit of all wood-workers.—The Wood-Worker.

SAWDUST AND SHAVING STEAM JET BLOWER.

AT a mill at Walterboro, South Carolina, there was an exhaust fan to convey sawdust from the mill to the refuse pile, which always proved a source of annoyance, as it was in a secluded spot under the mill and very seldom got any attention. Mr. W. J. Taylor, who had to do with the mill, designed a steam jet blower, the construction of which the accompanying cut will explain.



SAWDUST AND SHAVING STREAM JET BLOWER.

He says: "I first got a six-inch galvanized iron elbow, cut a hole in same large enough to insert a three-quarter inch steam pipe at *E*. I then put on six feet of piping, *A*, which formed the suction. Then I made my discharge pipe, *D*, 150 feet long, and at one place the pipe had to be elevated to a height of eighteen feet to allow railroad cars to pass under. I then ran my steam pipe from boiler to within one foot of elbow, put on three-quarter globe valve, *B*, then twenty-inch steam jet pipe, *C*, made of three-quarter steam pipe, with opening at discharge end closed down to three-eighths of an inch, which forms the jet. I turned on steam and it very easily kept all of the sawdust away from the mill, and we cut on an average from twenty thousand to thirty-five thousand feet of lumber per day. This blower can be constructed of wood where metal piping cannot be easily obtained, and for an experiment will answer every purpose for a long time. Of course, it does not work

as well as the metal pipe, as there is more liability of its becoming clogged. Cheapness and efficiency are its chief points.

WOODWORKING IN JAPAN.

MR. R. L. Greenlee, of Greenlee Bros., woodworking machinery manufacturers of Chicago, who is making a tour of the world, has been spending several months in Japan, making a close study of the country and its people. The result of his observations is given in an interview with William E. Curtis, special correspondent of the Chicago Record. In the course of that interview Mr. Greenlee said:

I have been looking extensively into manufacturing while I have been in the country, and the result of my observation is a very strong conviction that the Japanese will soon be able to furnish themselves with all they use and wear and eat without assistance from foreign nations. They have very little woodworking machinery. Nearly all of the machinery I have seen in Japan, and nearly all the imported tools, are of English and German manufacture.

Lumber is worth about twice as much in Japan as it is with us. Common lumber, which we sell for \$10 and \$12 a thousand feet, will bring 40 yen—that is \$20 gold—here. This is due chiefly to the scarcity of timber and the great labor required to work it up by their primitive processes. They have been cutting timber off their mountains here for 2,500 years, and, although the forests have been reproduced again and again during that period, it is difficult and expensive to get logs down from the mountain sides in the absence of the necessary facilities. They usually go into the woods and cut one log at a time, which they haul out by hand or by oxen, for many miles. Where streams are convenient they use them as we do, but they have no saw-mills in the mountains, although there is an abundance of water power everywhere. I understand they have tried them, but they have not been successful.

They cut all their lumber by hand with a wide and thin saw during a time of year when they have nothing else to do, and each man who is engaged in business that requires lumber usually buys his own logs and cuts them up himself at odd times. Women and men both work at it. One man or woman will work on the top of the log while another works underneath, but usually not with the same saw. I have seen four or five men working on the same log, each sawing off his own board. They raise the log at an incline of 45 degrees, with one end on the ground and a rest about the middle, and when they work down to the rest they tie it up and begin at the other end.

— All the lumber is dressed by hand. I have found but one planing mill in the country. That is at Yokohama.

It employs about 150 hands, and, curiously enough, its entire product is made into boxes and shipped to India. It does no business in the local market. The machinery is all from Boston. The manager tells me that the company is thinking of enlarging the plant by adding a sash factory and machinery for making blinds and doors, also for the India market. I do not know why they do not sell their goods in the local market, but I presume there is a good reason for it:

perhaps they get better prices in India.

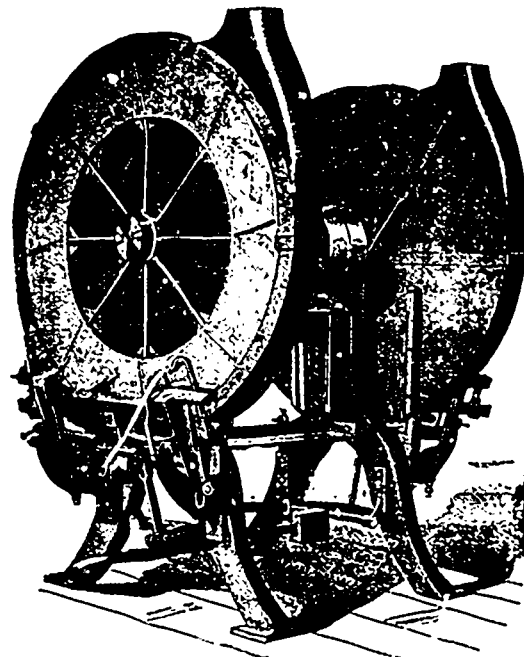
The Japanese make all the woodwork about a house by hand, and most of their houses are all wood. They are very skilful in all kinds of cabinet and joiner work, and are more rapid than our people. Their tools are better adapted for doing close work than ours, and are kept very sharp. Besides, they give a great deal more patience and labour to an article than our carpenters and cabinet makers. You never see scratches from nicked tools in their planed work. They use very few nails, but mortise almost everything. It is usually so well done that it is difficult to detect the joints except by the grain, and it lasts for ever. Some of their ships are made without a bit of iron in their composition. Everything is mortised.

The Japanese are very skilful in handling machinery when once they learn how. They learn best by imita-

tion. It is difficult to make them understand how to use a machine by explanation, but if they can sit by and see some one else do it they will learn very rapidly. *And in copying machinery they reproduce the original with great exactness and fidelity, even to any blemishes or ornaments that may appear.* I have seen some remarkable examples of their imitation. Usually the finish is a little rougher than the original, but the working parts are identical, and they get the finish all right after a little experience.

COMBINED FAN AND STAVE-JOINTER.

WE herewith present an illustration of the Holmes combined fan and stove jointer. One of the objections to all stove-jointers driven by power is the dust and shavings made, the removal of which demands constant care and expense, and occupies a large amount of valuable room, while the air in the entire building is completely filled with dust, destroying the health, comfort and clothing of all who are compelled to remain therein, at the same time forming one of the most dangerous tinders for the reception of sparks, taking up the oil from the boxes and journals, inducing crustation, heat, ignition, and not infrequently destructive conflagrations. All the dust and shavings are blown by the fan-jointer through conductors to the fuel-room, free of



COMBINED FAN AND STAVE JOINTER.

expense. This machine is built double or single and of sizes to suit from keys to barrels, each wheel has its own shaft, tight and loose pulleys, and runs independent of each other.

The wheels being overhung, there is nothing to prevent the light from striking the face of the wheel from all directions, and giving the operator a full view of the stave he is jointing. No oil dripping upon the operator as he performs his work, as in jointers where wheels are in-hung. Full view across face of wheel in setting knives, as the shield is flush with face of wheel. Rim of shield, cast iron, and back of sheet iron, consequently no wear out to it.

The patent clamp used on the machine is claimed by the manufacturers to be the quickest, simplest and easiest acting clamp in the market, of great power and strength, holding the stave firmly, taking the wind out of crooked stock, presenting it to the wheel and releasing it as the clamp drops to its rest. More or less bilge is secured by simply moving two set-screws and raising or lowering the clamp. Bevel is changed by two set-screws, which move the foot of the clamp in or out. Hooks are adjustable to different lengths of stave in a moment's time. Double independent jointers, or both wheels on same shaft, as customer desires, the difference in price being slight. All size of jointers are made.

The machine is made by the E. B. Holmes Machinery Co., Buffalo, N. Y.