

after they have been cut into suitable lengths. These include the (1) horizontal log band mill, (2) vertical log band mill, (3) circular saw mill, (4) horizontal log frame sawing machine, (5) vertical log frame sawing machine, (6) combined log and deal frame and (7) band re-sawing machine. The following is a brief description of these power-driven machines:—

1. HORIZONTAL LOG BAND MILL (see A, Fig. 2).—This consists of a 6 to 10-in. wide band or continuous saw, having teeth on one edge, which moves horizontally as indicated by the arrows, and is maintained in tension over two large (4½ to 7-ft. diameter) pulleys. The log is supported on a travelling carriage (running on wheels fixed to the floor, or the carriage may be provided with wheels which run on rails) and is fed end-on in the direction of arrow "1." The continuous cutting action of the saw is capable of rapidly breaking down a log or baulk into panels, flitches, boards, veneers, etc., by a succession of horizontal cuts, starting from the top. The cross rail supporting the pulleys is lowered as required after each cut by manipulation of the handwheel. The rate of feed can be rapidly varied from 10 to 80-ft. per min., and the rate of return may reach 200-ft. per min.

2. VERTICAL LOG BAND MILL.—As implied, the band saw has a vertical travel over two pulleys, one above and the other below the log, as it rapidly breaks down the log by a succession of vertical cuts. A log carriage is provided. The diameter of the pulleys varies from 5 to 9-ft. and the width of the saw from 8 to 16-in. It is well adapted for quartering logs and for accurately cutting wide boards, etc., when high outputs are required.

Both the horizontal and vertical log band mills are extensively employed and are replacing other machines (such as the vertical frame sawing machine, p, Fig. 2) because of the accuracy and high speed at which logs can be broken down, under complete control, and with the minimum of waste resulting to the converted timber.

3. CIRCULAR SAW MILL (see c, Fig. 2).—This consists of a vertical circular saw (see pp. 24, 26 and 27) of 4 to 7-ft. diameter and a travelling table (running on rollers) driven by a rack and pinion to feed the log end-on against the rotating saw as it forms a

vertical cut. It is also known as a rack feed saw bench, and is used for breaking down different-sized logs, edging flitches, etc. The rate of feed varies from 9 to 40-ft. per min., and the accelerated return of the table is 120-ft. per min.

4. Horizontal Log Frame Sawing Machine.—This has a horizontal saw fixed in a reciprocating (moving to and fro) frame which cuts, in both directions of the stroke, horizontal slices off the log as it is moved forward on a metal table or log carriage end-on towards the saw. It is used for sawing logs, usually of expensive hardwoods, into boards, planks and panels where limited power only is available. The rate of feed is relatively low. The log can be examined after each cut, and thus the sawing speed can be regulated as required.

5. VERTICAL LOG FRAME SAWING MACHINE (see D, Fig. 2).—This comprises a reciprocating frame containing a number of vertical saws, spaced as required to a minimum distance apart of ½-in., which works with an up-and-down motion to convert the log into deals or boards as it is driven end-on through the frame. The saws are only effective on the down-stroke. Most softwood logs were broken down by this type of machine. Whilst several pieces are cut by one operation, the conversion is comparatively slow, and, as already stated, this machine is gradually being superseded by the horizontal and vertical log band mills and band re-saws (see below) where large outputs are required.

6. COMBINED LOG AND DEAL FRAME.—This is of a lighter but similar type to the vertical frame sawing machine D, and is used for rapidly cutting (known as re-saving) deals and flitches into boards by one or more vertical saws which work with an upand-down motion as the timber is fed by means of horizontal and vertical fluted rollers with adjustable down and side pressures. Only one deal at a time can be dealt with in the "single" type, but the "double deal frame" converts two deals at once. The saws are comparatively thin and thus a minimum wastage of wood results

7. BAND RE-SAWING MACHINE.—This is similar to but lighter than the vertical log band mill and is designed for the rapid (up to 250-lin. ft. per min.) re-sawing of deals, flitches and battens into boards and panels with the minimum waste in wood owing to the thinness of the band saw.

Other machines are described on pp. 24-31.