

UNITED STATES PATENT OFFICE.

WILLIAM C. NASH, OF NEENAH, WISCONSIN, ASSIGNOR OF TWO-THIRDS TO SAILER AND WHITMORE MACHINE COMPANY, OF MENASHA, WISCONSIN.

PRESS-ROLL FOR PAPER-MAKING MACHINES.

No. 912,255.

Specification of Letters Patent.

Patented Feb. 9, 1909.

Application filed June 26, 1908. Serial No. 440,464.

To all whom it may concern:

Be it known that I, WILLIAM C. NASH, a citizen of the United States, residing at Neenah, in the county of Winnebago and State of Wisconsin, have invented a new and useful Press-Roll for Paper-Making Machines, of which the following is a specification.

My invention relates to an improvement in the construction of the roll by forming its surface of many blocks of wood of any suitable kind, which are secured upon a metallic cylindrical shell with the grain of the wood arranged preferably, in a radial direction as near as possible, although for some uses, fair results may be obtained with blocks in which the grain runs lengthwise of the roll, and the objects of my invention are, first, to produce a roll at a much lower cost than one formed of a solid log; second, to form a roll having superior wearing qualities to one in which the grain runs lengthwise of the roll, as with the surface formed of short blocks having their grain arranged at right angles with the surface, the soft or imperfect parts can be avoided; third, to avoid all knots and knurls in the lumber from which the surface of the roll is formed; fourth, to reduce the amount of lumber from what would be required to form the roll from a single log; fifth, to form rolls from what would be waste material in other industries; sixth, to prevent the roll from swelling or shrinking out of round when made up of blocks upon a metallic shell, as it is liable to do when made from a round log; seventh, to avoid any liability of splinters breaking off, when blocks having the grain radially arranged are used; eighth, to produce a roll having an extremely hard surface when a specially hard one is desired by using the radially arranged blocks, instead of longitudinally arranged grain ones; ninth, to produce a roll of any desired length or diameter, without a long search in the forest over many acres of land for a tree that will meet the requirements of the roll. These objects I attain by the construction shown in the accompanying drawings, in which,—

Figure 1 is a longitudinal section, vertically of the roll broken midway its ends, and showing a completed roll. Fig. 2 is an end elevation of the complete roll, a part of one of its end ring flanges being removed. Fig. 3 is a longitudinal elevation of a short section of ends of the roll shaft, of four circular courses of blocks in position around the end

of the roll, the rest of the cylindrical shell being uncovered, but broken between its ends. Fig. 4 is an end elevation of the preferred form of blocks for forming the outer surface of the roll. Fig. 5 is a plan, upon an enlarged scale, of the lower, or inner side of a pair of blocks, of which Fig. 4 is one of the pair, formed of similar sections, with a wedge between them.

Similar numerals indicate like parts in the several views.

The cylindrical shell or core, 1, is formed of a single casting with its solid ends 1^a, and tubular journal shafts 2, one of the shafts being extended, as 3, for the application of a gear, clutch member, or other means by which the roll can be revolved. In forming the roll of a single casting, much labor in finishing the roll is avoided. Upon turning up the journals and ends of the shell, upon each end thereof a shoulder 4, is formed, against each of which a ring flange 5 is fitted to be bolted, the flanges being of a larger outside diameter than that of the shell 1. The flanges are each provided with bolt holes and each end of the shell with corresponding holes 6, into which tap bolts 7, are screwed. The bolt holes in each flange are counter bored for receiving the heads of the tap bolts, the counterboring being essential only for the safety of the operators.

At equal spaced distances around the shell, dovetail projections 8, are arranged, longitudinally of the shell, they are made integral with it, and like the cylindrical surface of the shell, do not require to be machine finished. Between adjoining projections 8, rectangular blocks of wood, 9, (see the three blocks upon the lower side of Fig. 2), having upon their inner side dovetails 10, represent blocks shown in application No. 404,459, filed November 29, 1907, and not the form of block in this invention, but which blocks when split into two parts, as 11, in Fig. 4 are driven, when placed together in pairs, in between two of the dovetails 8 until the entire outer surface of the shell is covered. These blocks it should be noted, are first kiln dried, and then fitted to the dovetails 8, and to each other, so that when mounted in position upon the shell, they will present a solid surface around the roll. The blocks are to be made in suitable sizes lengthwise of the roll with a rectangular outer surface, and preferably so as to break joints with the joints of

adjoining rows, the length of the rows being uniform, and a little in excess of the length of the outer surface of the shell, so that when the ring flanges are bolted to the shell, the individual blocks will not only be pressed tightly together, but the wood of each block compressed to some degree. If at any time one or more blocks in any row prove to be defective, by removing bolts 7 and one of the flanges 5, the defective block can be removed with its companion half of the block 9 and a perfect one inserted without disturbing the blocks of any other row. This improved form or manner of covering the shell is shown in Figs. 2 and 3, in the upper part of them. Each half of a block 9 is formed separately, they being duplicates one of the other, and the two pieces when placed together, slightly more than fill the space between any two dovetails upon the shell, and each piece has one member, 10^a, of the dovetail 10. In placing the blocks in position, one flange 5 is to be firmly bolted against the shoulder 4 of the shell, then one piece 11, is placed against a dovetail 8 of the shell, and as the two will slightly more than fill the space between two of said dovetails upon the shell, the second piece is entered by placing it at an angle across the space between two projections until it can be entered by driving, when it is with suitable tools, driven in alongside of the first piece, the wood of the member 10^a, being compressed in the driving until it is driven "home", after which a wedge 12, is driven into the joint between the two pieces at a point very near the joint between the blocks and shell. These wedges may be a nail, (one or more), of a suitable length and cross sectional area. It may be noted that the end blocks around the roll, are rabbeted out so that they extend over the ring flanges at each end of the roll, flush with the end of the shell. The entire surface of the shell having been covered as above described, the other ring flange is to be bolted to the shell, when the roll should be immersed in water until sufficiently swelled, when it is to be turned off to a perfect surface of the required diameter.

I am aware that rolls have been made in which the grain of the wood was arranged radially with the axis of the roll, as in the patents to Sargent and Sargent, No. 431,174, July 1, 1890, and to Fletcher, No. 800,845, Oct. 3, 1905, but the rolls were made up of a plurality of disks formed of several segments, instead of individual blocks, as in this improvement. I am also aware of the pulley of Winter, No. 662,046, Nov. 20, 1900, having a core with longitudinal ribs and wooden facing blocks, but said blocks extend the entire length of the face of the pulley, the grain running lengthwise of the face, and the blocks being counterbored upon their outer surface for providing fastening means

for the blocks which counterbores would destroy the surface for a press roll.

Having described my invention, what I claim and desire to secure by Letters Patent, is,—

1. In a press roll, in combination, a metallic core or shell, suitable journals upon which said core or shell may be revolved, a series of dovetail projections spaced apart at equal distances and arranged longitudinally around the outside surface of the shell, a ring flange bolted to one end of the shell of a greater outside diameter than said shell with its dovetail projections, a plurality of blocks of wood, each having a dovetail member adapted to be engaged by a dovetail member of said shell, and when two of said blocks are placed together with their dovetail members outside of, and parallel with each other, are adapted to be driven in between two adjoining dovetail projections aforesaid, and a wedge driven in between the meeting faces of each of said two similar shaped blocks near the outer surface of said shell, and a second ring flange bolted to the other end of said shell for clamping said blocks together, said blocks when assembled in position around the shell from end to end and clamped together, presenting an unbroken solid body adapted to be turned off to a smooth and even surface, substantially as set forth.

2. In a press roll, in combination, a metallic core or shell, suitable journals upon which said core or shell may be revolved, a series of dovetail projections spaced apart at equal distances and arranged longitudinally around the outside surface of said shell, a ring flange of a greater outside diameter than said shell with its dovetail projections, bolted to one end of said shell, a plurality of blocks of wood, each having a dovetail member adapted to be engaged by a dovetail member of said shell, the grain of the wood of each block being arranged in a substantially radial direction from the axis of said roll, and when two of said blocks are placed together with their dovetail members outside of and parallel with each other, are adapted to be driven in between two adjoining dovetail projections aforesaid, and a wedge driven in between the meeting faces of each of said two similar shaped blocks near the outer surface of said shell, and a second ring flange bolted to the other end of said shell for clamping said blocks together around the shell, said blocks when assembled in position around the shell from one end to the other presenting a solid unbroken surface adapted when turned off, to present a smooth even surfaced roll, substantially as described.

WILLIAM C. NASH.

Witnesses:

M. M. PLANNER,
GEO. H. UTZ.