

No. 817,382.

PATENTED APR. 10, 1906.

W. MERRILL.
WOOD CUTTING MACHINE.
APPLICATION FILED DEC. 18, 1905.

2 SHEETS—SHEET 1.

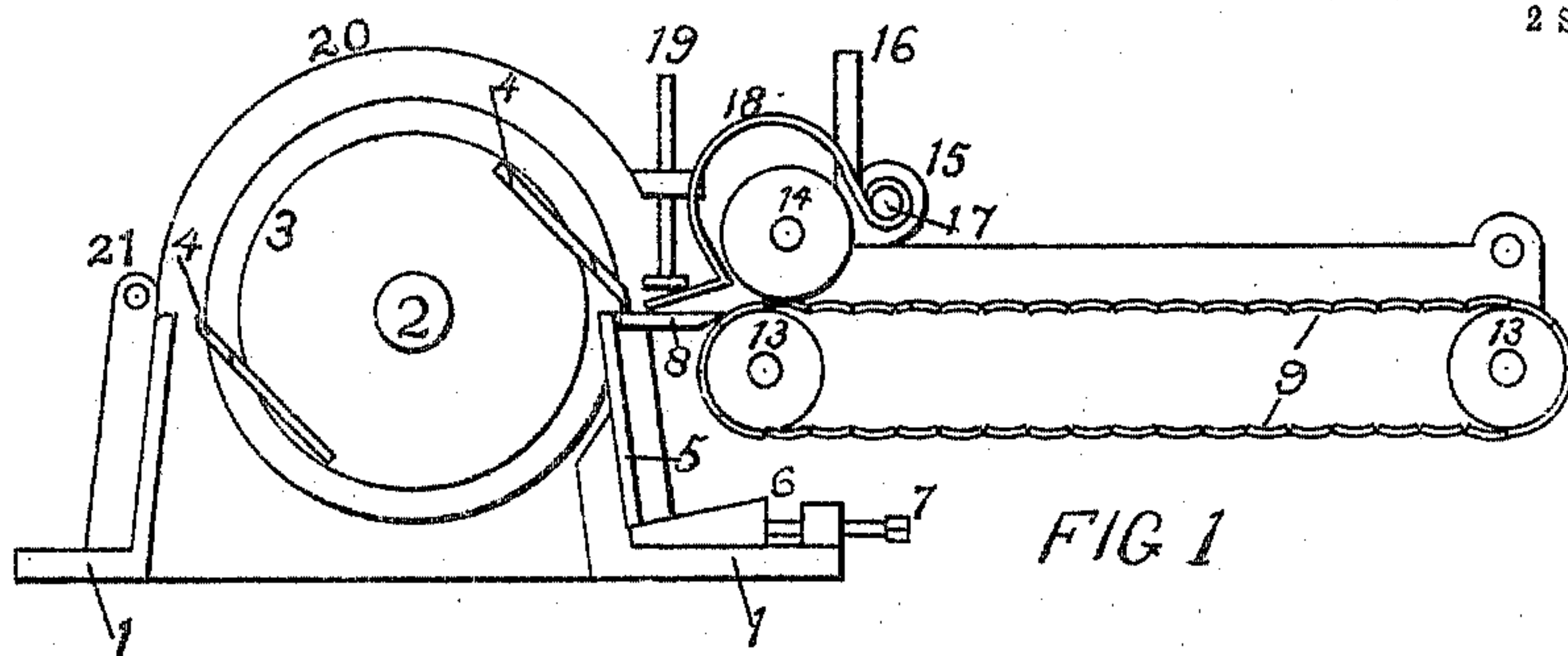


FIG 1

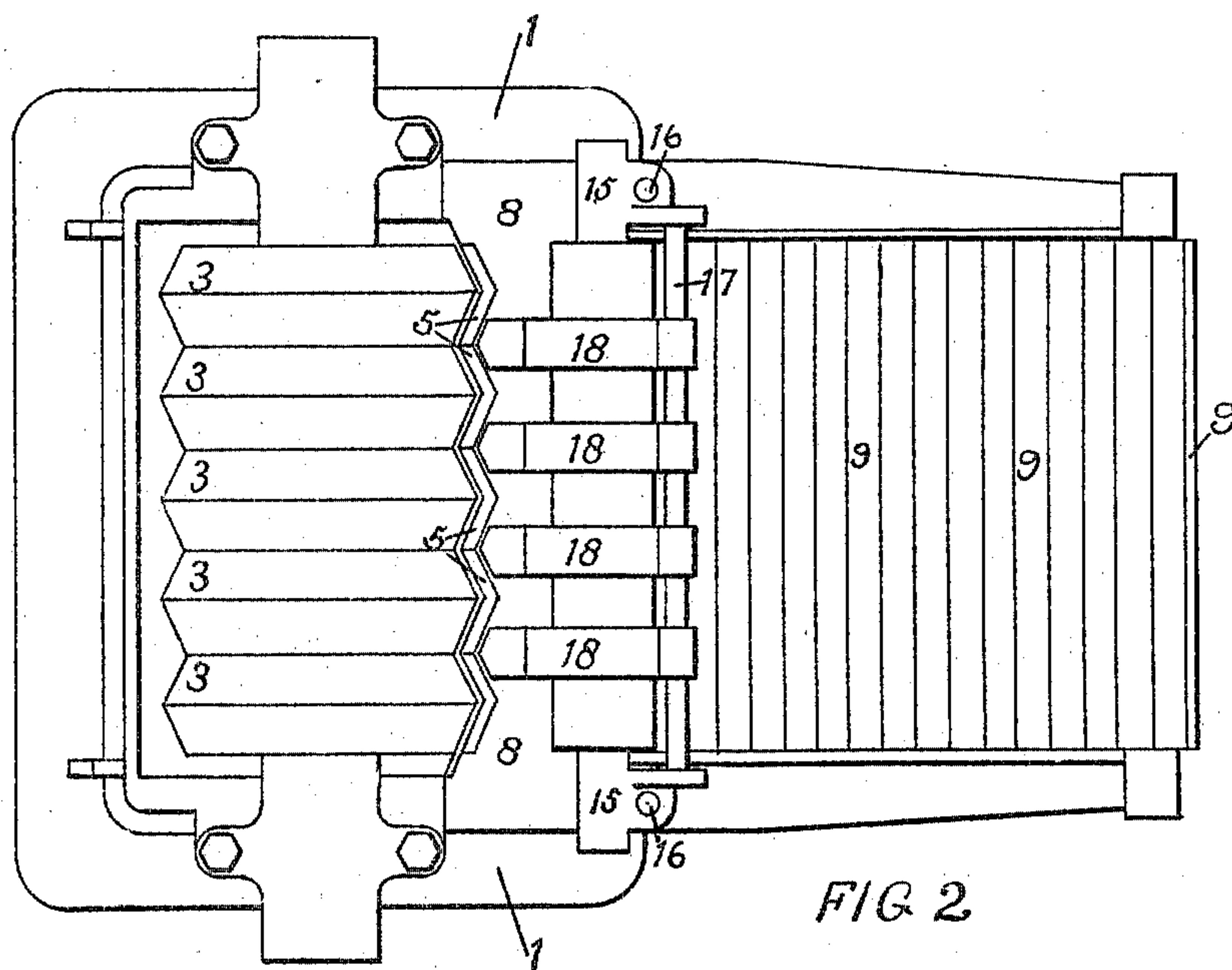


FIG 2

Witnesses

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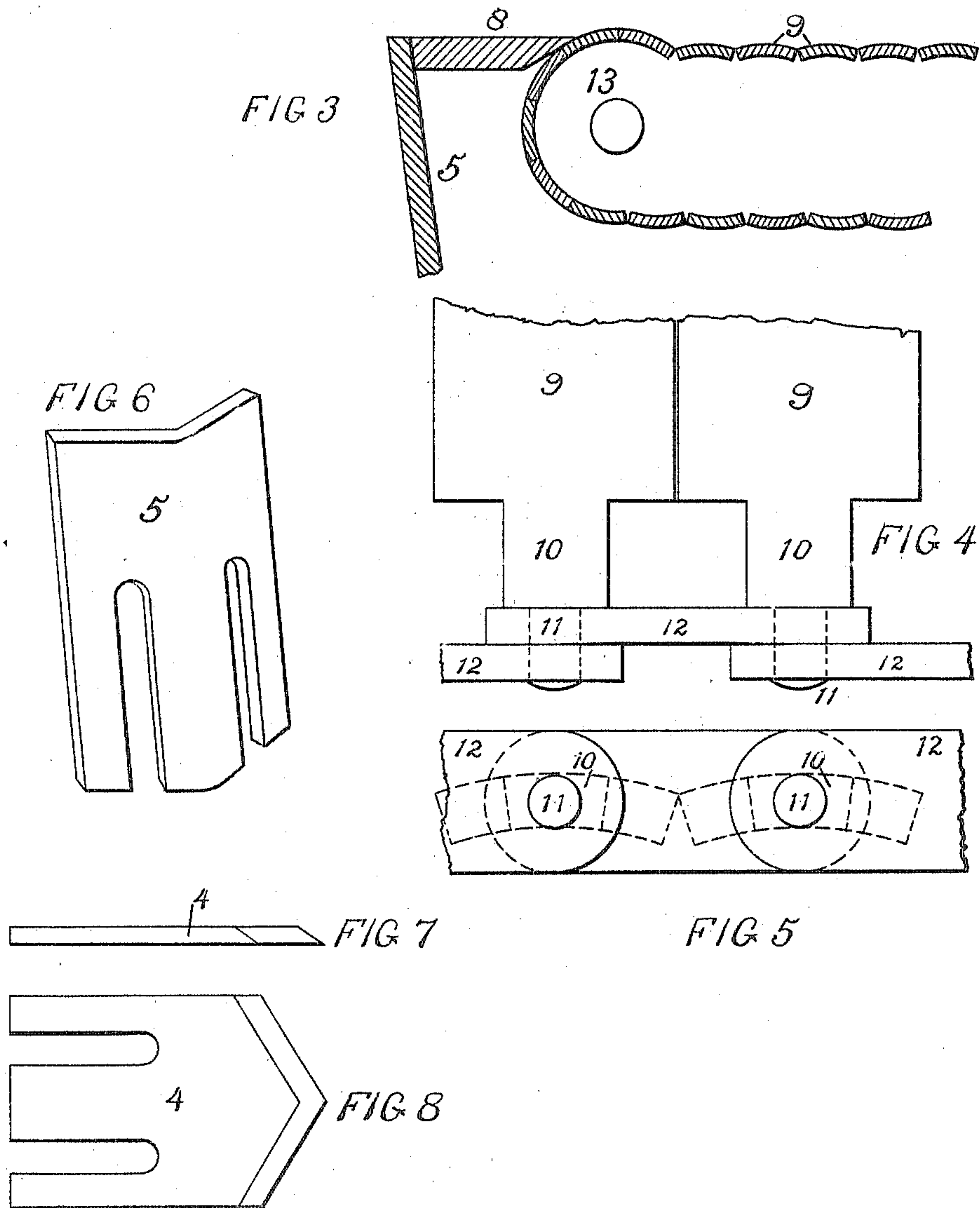
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UNITED STATES PATENT OFFICE.

WILLIAM MERRILL, OF SAGINAW, MICHIGAN, ASSIGNOR TO MITTS & MERRILL, OF SAGINAW, MICHIGAN, A CORPORATION OF MICHIGAN.

WOOD-CUTTING MACHINE.

No. 817,382.

Specification of Letters Patent.

Patented April 10, 1906.

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To all whom it may concern:

Be it known that I, WILLIAM MERRILL, a citizen of the United States, residing at Saginaw, in the county of Saginaw and State of Michigan, have invented certain new and useful Improvements in Wood-Cutting Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to machines for cutting wood; and it consists of a frame supporting a revolving cylinder carrying knives in conjunction with feed-rollers and carrier-table for conveying the wood to be cut and bed-knives upon which the wood rests while being cut and pressure-fingers to hold the wood against the bed-knives.

My invention is somewhat similar in parts and used for a similar purpose to the machines upon which Letters Patent were issued to Edward G. Pake, dated September 7, 1886, and other patents issued to myself dated June 19, 1888, April 29, 1890, May 31, 1892, and three patents dated September 18, 1894.

The objects of my invention are to provide an improved form of knife and cylinder and improved form of bed-knives and method of supporting the same, whereby thin pieces of wood, such as waste veneer or bark, which has a tough fibrous inner portion may be cut in a manner superior to any heretofore accomplished; also, to provide means for feeding such material against the cutting-cylinder and hold it firmly while being cut, so that it cannot be drawn through in long pieces by the knives.

The machines as formerly made and described in the patents above mentioned use wide or narrow knives of flat face cutting close to straight-edged bed-knives, and they all have inclined feed-spouts, the material being fed by gravity, assisted by the pulling action of the knives. These machines cut thick pieces of wood in excellent manner, but none of them will cut very thin veneer or shavings or stringy bark into short small pieces, but all of them will pull such material through in long shreds or splinters, which clog the chain conveyers or the suction-pipes

used for carrying away the chips. While this improved machine using knives of V shape cutting close to opposing bed-knives of similar shape combined with the feed-table, which instead of being inclined or almost at a tangent with the circumference of the cylinder, as in the former machines, is nearly horizontal or almost radial to the circumference of the cylinder, and the material being firmly held down against the bed-knives by the pressure-rollers and fingers cannot be pulled through by the revolving knives, and whether the material is presented to the knives lengthwise or sidewise of the grain it will always be cut across the grain, owing to the peculiar shape of the revolving knives and the corresponding bed-knives, which are set very close to each other.

In the drawings, Figure 1 is a side elevation, partly sectional, showing the supporting-frame, the knife-carrying cylinder, the chain feed-table, pressure-rollers, and pressure-fingers. Fig. 2 is a plan of the same. Fig. 3 is a section showing a part of the chain-table, bed-knife, and front plate. Fig. 4 is a plan view of the ends of two of the steel slats, with connecting-links, of which the chain-table is composed. Fig. 5 is an end view of the same. Fig. 6 is a perspective of one of the bed-knives. Fig. 7 shows an edge view of one of the revolving knives. Fig. 8 is a plan view of the same. Each part is indicated by the same number in each figure.

1 is the supporting-frame. 2 is the shaft carrying the cylinder made of separate sections 3. The periphery of these sections is V-shaped, corresponding to the shape of the knives 4, which may be fastened to the cylinder-sections in any convenient manner. Fastened to the supporting-frame are the several bed-knives 5, each bed-knife resting upon the wedge 6, which is adjusted by the screw 7 to keep the top edge of the bed-knife level with the front plate 8. The two lower feed-rolls 13 carry a chain-table made of bars 9, the concave inner surfaces of which are bent to the same circle as the circumference of the rollers, so that in passing over the rollers the outside or convex surfaces of the chain-table form a true circle, which comes in immediate close contact with the edge of the front plate 8. This is so close as to prevent even the very thinnest veneer from passing under the front plate 8.

The bars 9, composing the chain-table, are connected to each other at the ends by being attached to links 12, by means of the rounded ends 11, and the spaces between the reduced ends 10 may receive the teeth of sprocket-wheels, by which they may be driven. It is evident that the bars 9 might be fastened at each end to the ordinary detachable link belting, if the links thereof have suitable side lugs and the ends of the bars are made to fit.

The rollers 13 can be driven by any suitable means, such as a belt or sprocket-chain, as can also the top pressure-roll 14, which is supported by the journal-boxes 15, they in turn being supported by the standards 16 and loosely fitted, so that either or both ends can rise to conform to the thickness of the material which is being fed into the machine. To projecting arms on the journal-boxes 15 is connected a bar 17, which supports the loosely-fitting pressure-fingers 18. The ends of these pressure-fingers are also made V shape to correspond with the top of the bed-knives. On the end of each pressure-finger rests the pressure-bar 19, which slides through a projecting lug on the cylinder-cover 20. This pressure-bar may have weights fastened to its upper end.

The action of the machine is obvious. Any small or large quantity of waste veneer or bark can be thrown on the moving table. It will pass beneath the upper roller, which firmly holds it and which may be actuated by the friction of the moving material, or it can be independently driven by belt or sprocket-chain. In its passage through under the roller the material lifts the pressure-fingers 18 and pressure-bars 19, and after the last of the material has passed from under the top pressure-roller 14 the short remaining end is firmly held by the pressure-fingers until another batch of material pushes it along. If it were not for these pressure-fingers, the loose light pieces of veneer would be caught with the knives and pulled through, and not being firmly held they would not be cut into small pieces, but would pass through in long splinters or strings into the suction-pipe, clogging it. The suction-pipe may be connected in any suitable manner to the opening in the bottom of the supporting-frame 1. As the top edges of the bed-knives become worn and are reground they can be elevated to the proper position by pushing in the wedges 6 by means of the screws 7, thus affording close adjustment and solid support. The bed-knives may be securely clamped to the supporting-frame by bolts, which are not shown.

It is quite obvious that the thin veneer may be presented to the cutting-cylinder endwise or sidewise of the grain of the wood, and the V-shaped knives will cut at an angle across the grain, so that it is impossible to make long splinters such as are made by flat knives when the material is presented sidewise of the grain or are made by any kind of knives when the material passes down a spout so inclined that the action of the knives tends to draw in the material very rapidly.

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

1. In a machine for cutting wood, the combination of a cylinder carrying V-shaped knives with opposing V-shaped bed-knives and a front plate with its upper surface even with the top edges of the bed-knives substantially as described and for the purpose set forth.

2. In a wood-cutting machine, the combination of a cylinder carrying V-shaped knives, the opposing V-shaped bed-knives, the front plate 8, and a chain-table running in close contact with the front plate substantially as described and for the purpose set forth.

3. In a wood-cutting machine, the combination of a cylinder carrying V-shaped knives, opposing V-shaped bed-knives, a front plate, a traveling chain-table, and a flexibly-supported top pressure-roll, all substantially as described and for the purpose set forth.

4. In a wood-cutting machine, the combination of a cylinder carrying V-shaped knives, a set of V-shaped bed-knives, a front plate, a traveling chain-table, a top pressure-roll, and a set of pressure-fingers flexibly attached to the pressure-roll substantially as described, and for the purpose set forth.

5. In a wood-cutting machine, the combination of a cylinder carrying V-shaped knives, a set of V-shaped bed-knives, a front plate, a traveling chain-table, a top pressure-roll, a set of pressure-fingers flexibly attached to the pressure-roll, each pressure-finger having above it a pressure-bar substantially as described and for the purpose set forth.

6. In a wood-cutting machine, the combination of a cylinder carrying V-shaped knives, with opposing V-shaped bed-knives and supporting-wedges under the bed-knives substantially as described and for the purpose set forth.

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Witnesses:

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