A. H. NORDYKE AND J. E. NORRIS.

WOOD STRIP CUTTING MACHINE.

APPLICATION FILED JUNE 13, 1918.

1,313,325.

Patented Aug. 19, 1919.

FIG. 1

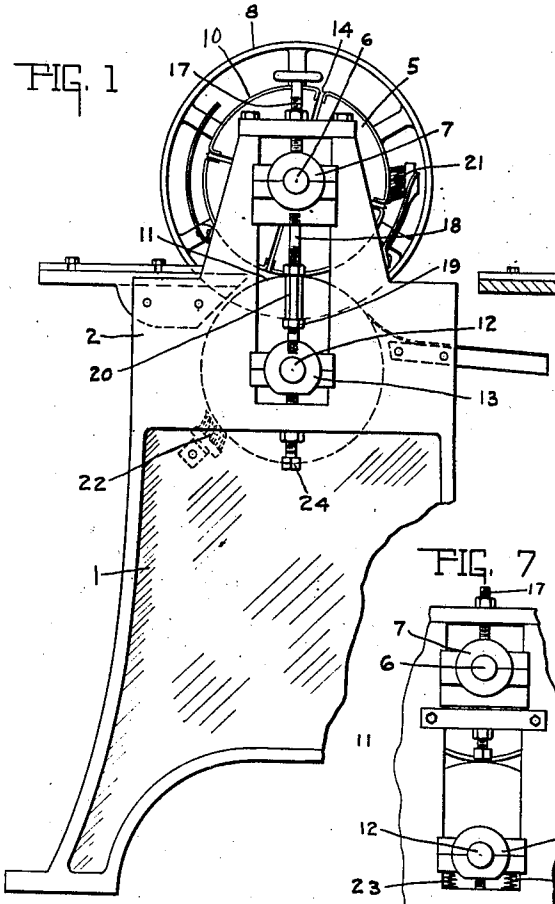


FIG. 3

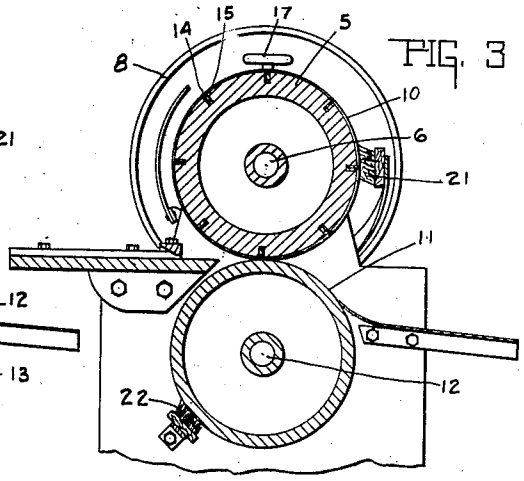


FIG. 7

FIG. 4

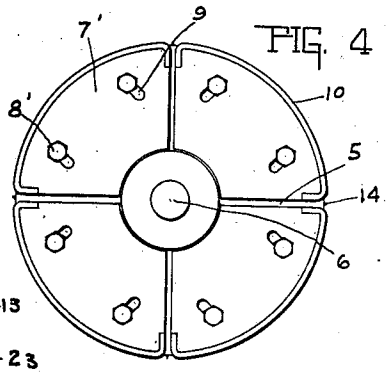


FIG. 2

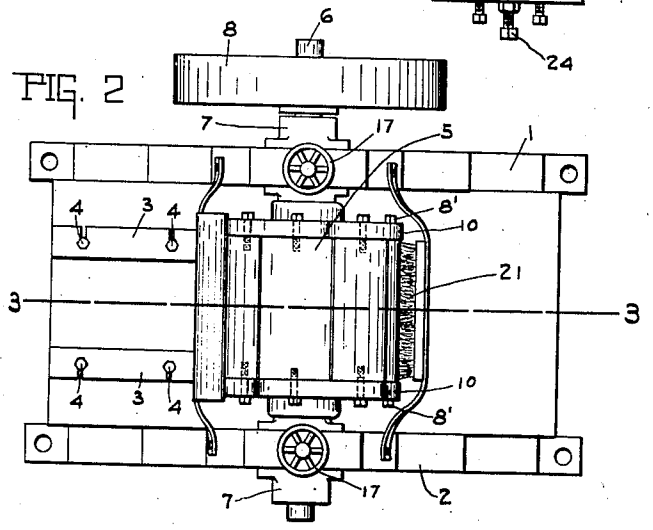


FIG. 5

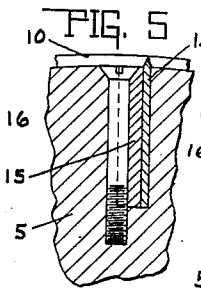
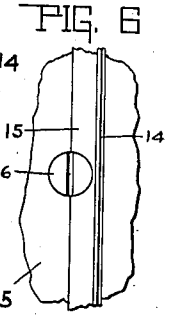


FIG. 6



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WOOD-STRIP-CUTTING MACHINE.

1,313,325. Specification of Letters Patent. Patented Aug. 19, 1919.

Application filed June 13, 1918. Serial No. 239,847.

To all whom it may concern:

Be it known that we, ADDISON H. NORDYKE, a citizen of the United States, residing at Indianapolis, Marion county, and State of Indiana, and JOHN E. NORRIS, a citizen of the United States, residing at Indianapolis, Marion county, and State of Indiana, have invented and discovered certain new and useful Improvements in Wood-Strip-Cutting Machines, of which the following is a specification.

Our invention relates to wood cutting machines and particularly to a machine adapted to cut thin veneer strips into plates adapted as separators for storage batteries. The object of the machine is to provide means whereby a pressure receiving and frictionally driven feed roll and a complementary cutter bearing and driving feed roll are adapted to be driven at the same surface speed and to provide means coöperating with such feeding means for preventing slipping of the strip as it passes between the rolls by which association of mechanism the strip will be accurately cut into sections of uniform length.

With these objects in view, our invention is embodied in preferable form in the construction and arrangement hereinafter described and illustrated in the accompanying drawings.

In these drawings, Figure 1 is an end view in elevation of the machine; Fig. 2, a top plan view; Fig. 3, a sectional view on the line 3—3 of Fig. 2; Fig. 4, an enlarged detail end view of the upper rollers adapted to bear the cutters and the frictional driving face for the lower roller; Fig. 5, a vertical detail section of one of the cutters and its clamping means; Fig. 6, a detail plan of the part shown in Fig. 5, and Fig. 7, a detail end view of a modification.

Referring to the drawings, 1 indicates the standard of the machine which is provided with a bed 2 along the upper surface of which is adapted to be fed a strip of thin wood which is adapted to be cut into sections of uniform length. This strip is adapted to be fed forward by hand between guide members 3, which are provided with lateral slots engaged by set screws 4 whereby the guides may be adjusted toward one another to accommodate the same to strips of different widths. The strip is fed in between the feeding pressure receiving and cutting rolls of which 5 indicates the upper roll which may consist of a hollow drum of iron or steel and is mounted on a shaft 6 journaled in bearings 7. The shaft near one end is provided with a driving pulley 8. At each end the roll 5 has attached thereto a series of radially adjustable segments 7 preferably formed of wood. These segments are secured to the drum by screw bolts 8 entering the latter and engaging the elongated slots 9 formed in the segments whereby the latter may be adjusted in and out relatively to the shaft center of the drum, in order to regulate the driving pressure, to take up wear and to adapt the rolls to the strips of different thicknesses.

Each segment is provided on its surface with a frictionally driving facing 10, preferably of leather, and which is adapted to be turned down at its ends over the edges of the segment and secured thereto in any suitable manner. These segments constitute separate and independently adjustable frictional facing carriers for the upper roll. The frictional facing strips are adapted to bear against the surface of the lower feeding and pressure receiving roll 11 which is preferably made of soft steel and in the form of a hollow drum, and has its shaft 12 mounted to turn freely in the bearings 13. The lower roll is thus adapted to be frictionally driven by the upper roll.

The upper roll is provided with a series of cutting blades 14 extending longitudinally of the roll and spaced apart at suitable intervals corresponding to the length of the sections to be cut. Each blade is mounted within a longitudinal slot formed in the drum and it is held clamped within this slot by means of an insert plate 15 bearing against the flat side of the blade and adapted to be forcibly clamped against the same by the head of a screw bolt 16, the upper edge of the plate 15 being inclined to permit of a wedging action of the bolt head against the same as the bolt is screwed to its seat. This arrangement provides a secure means of removably clamping each individual blade in its seat.

The upper half of the bearing 7 of the driving shaft of the upper roll is adapted to be pressed against by a regulating pressure screw 17 while the under half of said

bearing and the upper half of the roll bearing 13 are engaged respectively, by the regulating screws 18 and 19 tightly threaded into screw sockets in the bearings, which screws are controlled by a turnbuckle 20 having right and left hand threads. By this arrangement the distance separating the bearings and consequently the distance also between the metal surfaces of the rolls against which the strip bears and the amount of pressure of the driving members against the lower roll may be regulated and fixed, within the limits of elasticity of the driving members. In Fig. 7, a modification is shown in which the lower roll is yieldingly supported by regulable springs 23, and the turnbuckle and bolts between the bearings are dispensed with. By this arrangement, an automatically yielding and compensating adjustment between the rolls is obtained as the blades strike the strip, thus taking the place of the fixed adjustment provided by the turnbuckle and bolts. A stop screw 24 bearing against the under side of the journal box serves to limit the downward yielding movement of the lower roll.

21 and 22 are brushes adapted to bear against the surfaces of the rolls 5 and 11 respectively, to clean the surfaces of the same of sawdust and to prevent loose pieces from being carried down between the strip and the rolls.

The operation of the machine is as follows:

As the strip is fed forward on the bed, it will be guided in a straight path between the guides 3, so that the cutters will meet it accurately at a right angle to the length of the strip. As the strip is fed under the rolls, it will be gripped between the surface of the upper roll intermediate the border frictional bands and the face of the lower roll. At the same time the frictional facing members 10 will bear upon the surface of the lower roll adjacent the ends thereof, thus driving this roll at the same surface speed as the upper roll. As each cutter is carried against the strip in the rotary movement of the upper roll, it will cut through the strip.

The regulating screws 18 and 19 are so adjusted that the pressure of the friction strips on the surface of the lower roll will be maintained at proper feeding pressure and yet the friction members be permitted to yield slightly owing to their inherent resilience which may be aided to some degree by the slight elasticity of the wood segments on which they are mounted, so that upon the additional pressure exerted against the lower roll by the cutting action of the blades, a driving contact will still be maintained. The extent of projection of the frictional members beyond the surface of the lower roll is substantially equal to that of the thickness of the strip being cut, and the regulation obtained by the screws spaces the metal surfaces apart the required distance to enable the strip to be sufficiently gripped for feeding the same, and yet to permit the friction bands to possess a close driving bearing on the lower roll.

The same result is obtained automatically by the use of the springs without the turnbuckle screws as shown in Fig. 7 and may also be obtained by the conjoint use of the screws and turntable and springs, in which arrangement the lower screws 19 would merely abut against the upper half of the lower bearing without being threaded into the same.

In any of these arrangements a friction drive of the lower roll is provided, thus imparting to this roll the same surface speed as the upper roll and also a yielding pressure is provided operatively intermediate the rolls for the purpose of enabling the latter to yield under the added pressure of the cutting action of the knives, while maintaining the driving contact. The result is that a substantial, uniform feeding pressure is exerted on the strip and a substantially uniform pressure kept on the driving surfaces whereby uniform lengths of strip sections are cut. It is necessary to accommodate the pressure not only to different thicknesses of the strip but to different degrees of hardness of the wood, and such adjustment must be regulated to a very fine degree to insure the correct feed of the strip.

It will be seen that both rolls are separately adjustable, whereby as new adjustments are made, particularly when required by wear of the surfaces, the tangent to the feeding surfaces of the rolls may always be maintained in the same plane as that of the feeding table which is a point of importance in feeding a continuous comparatively stiff strip of material such as wood.

In order to obtain the proper degree of pressure of the frictional driving members against the lower roll and to take up wear at any part of the circumference of the friction face, the segments may be separately and individually adjusted radially, the space between the inner ends of each segment and the shaft hub as the former is moved out being taken up with suitable thin liners. This arrangement thus insures a uniform frictional grip of the driving facing against the lower roll throughout the entire circumference of the same.

Having thus described our invention, what we claim is:—

1. In a material severing machine a roll provided with spaced blades, a pressure roll journaled upon a shaft parallel with the axis of the severing roll and normally positioned with its periphery contiguous thereto, means to adjust the rolls relatively to each other to vary the interval between their pe-

ripheries, and means to adjust the horizontal feed plane of the rolls without disturbing their adjustment.

2. In a material severing machine a roll provided about its periphery with severing blades, a pressure roll journaled upon a shaft in parallelism with the axis of the severing roll, means for adjusting the rolls yieldingly relative to each other to vary the interval between their peripheries, and means to adjust the axes of the rolls to vary the position of the interval without disturbing the adjustment of the rolls relative to each other.

3. In a material severing machine a severing roll provided about its periphery with spaced severing blades, means to rotate the severing roll, a pressure roll journaled with its periphery adjacent the periphery of the severing roll, and a friction member carried by the severing roll in frictional and driving engagement with the pressure roll, such friction member being composed of radially adjustable segments.

4. In a material severing machine a severing roll provided with a plurality of severing blades spaced about its periphery, means to rotate the severing roll upon its axis, a pressure roll journaled with its periphery adjacent the periphery of the severing roll, means to adjust the interval between the rolls, and a friction driving member carried by the severing roll in engagement with the pressure roll, such friction driving member comprising a plurality of radially adjustable segments.

5. In a material severing machine a severing roll provided with a plurality of severing blades spaced about its periphery, a pressure roll journaled in parallelism with its periphery adjacent to the severing roll, means to vary the interval between the rolls, a friction member carried by the severing roll in frictional and driving engagement with the pressure roll, said friction member comprising a plurality of radially adjustable segments, and means to vary the vertical position of the axes of the rolls without disturbing the frictional engagement of the friction member with the pressure roll.

In witness whereof we have hereunto set our hands and seals at Indianapolis this 8th day of June, A. D. nineteen hundred and eighteen.

ADDISON H. NORDYKE. [L. S.]
J. E. NORRIS. [L. S.]

Witnesses:
H. P. DOOLITTLE,
M. L. SHULER.